DIV. OF FISHES
OF MICHIGAN
Jul. 7, 1959
MUSEUMS

COMMERCIAL FISHERIES REVIEW

Vol. 21, No. 6 JUNE 1959

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
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Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, May 21, 1957. 5/31/60

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COVER: A large Russian fishing fleet was reported operating late in March and early in April off Alaska's Bristol Bay. The fleet was said to consist of 50 trawlers and auxiliary or mothership vessels. A Russian trawler and large mothership vessel are shown side by side in this aerial photo. The fleet was operating northeast of the Unimak Island to Pribilof Islands deep-water trench. Since United States and Canadian vessels fish the trench area extensively, they probably have sighted some of the Russian vessels.

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SHRIMP EXPLORATIONS OFF SOUTHEASTERN COAST OF THE UNITED STATES (1956-1958)

By Harvey R. Bullis, Jr.* and Warren F. Rathjen**

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SUMMARY

New deep-water royal-red shrimp grounds were discovered off the Florida east coast during the 1956-1958 explorations of vessels chartered by the U. S. Bureau of Commercial Fisheries. The trawling investigations were conducted from Cape Hatteras, N. C., to Dry Tortugas, Fla. Commercial catches of royal-red shrimp have ranged as high as 800 pounds (heads-off) per fishing day. These shrimp, of a size desired by industry, have been found most consistently in depths of 180 to 220 fathoms between St. Augustine and Cape Canaveral, Fla.

Other possible commercial fishery resources of rock shrimp, scallops and flounder also were located.

The experience of both industry and the Bureau in operating conventionally-powered shrimp trawlers in the swift current of the Gulf Stream indicated that these vessels are presently underpowered for this work.

Fig. 1 - M/V Pelican 70-foot steel shrimp vessel used during early part of explorations for royal-red shrimp along the South Atlantic coast.

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BACKGROUND

Between 1940 and 1955 there were several limited exploratory shrimp trawling operations along the southeastern Atlantic coast of the United States. All but one of these surveys were quite restricted in both area and depth coverage, and the total exploratory effort during this time left broad gaps in the seasonal picture. The general interest of the shrimp industry in more complete seasonal coverage, including broader depth ranges, led to an allocation of funds provided by the Saltonstall-Kennedy Act, for additional exploration between Cape Hatteras and Key West. This report presents the exploratory results obtained by the Pelican and Combat, U. S. Bureau of Commercial Fisheries chartered vessels, which operated continuously in this area from February 1956 through October 1957. Two additional cruises to the

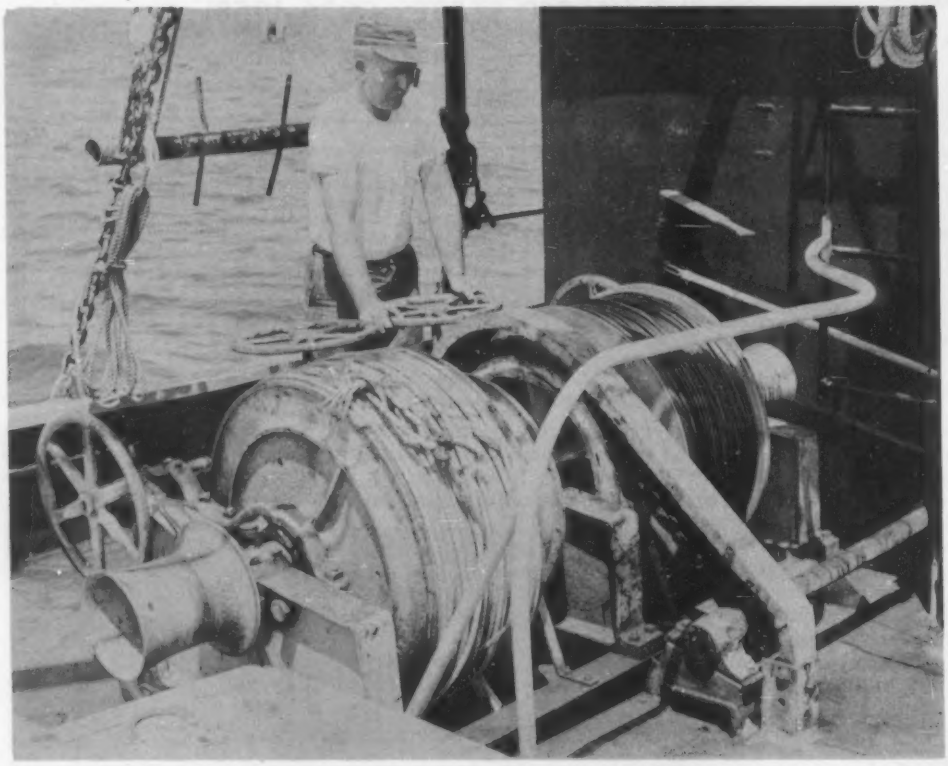

Fig. 2 - Trawling winch used on the Pelican for deep-water shrimp exploration.

area were made in November 1957 and June 1958 by the Bureau's chartered vessel Silver Bay. These were scheduled primarily to develop improved gear and fishing techniques for operating in the strong Florida current.

In programming this work, considerable time was spent in re-evaluating previous explorations, primarily to obtain leads for future fishing trials. A total of some 901 exploratory drags made by the Bureau's vessels Pelican and Albatross III, the University of North Carolina work with the Reliance, the operations of the T-19 by the Bears Bluff Laboratory, and the cooperative Fish and Wildlife Service-Gibbs Corporation work on the Antillas, showed that with the exception of a few scattered

brown-grooved shrimp (Penaeus aztecus), no commercial species were found beyond their known and expected depth ranges. The deepest of any of these drags was 130 fathoms and the only species of shrimp that showed any new potential was the rock shrimp, Eusicyonia brevirostris.

OPERATIONAL PROGRAM AND CRUISE ITINERARY

With the exception of some trawling along the South Carolina coast during the summer and fall of 1955 by the Bears Bluff Laboratory, all previous exploratory fishing along the southeast Atlantic coast had been carried out during the months of January to June. Since this relatively large amount of effort, which had been confined to the Continental Shelf (inside 100 fathoms), had failed to turn up new shrimp fishing areas, and since the present program was to start in late February or March, deep-water exploratory coverage was given primary emphasis. Depth-temperature and bottom-type data that had been collected by the Service's Theodore M. Gill between Cape Canaveral and Cape Hatteras showed similar conditions, in many areas within the 150-250 fathom range, to those in the royal-red shrimp grounds off Dry Tortugas. Special effort was programmed to determine the presence of royal-red shrimp (Hymenopenaeus robustus) off the Atlantic coast.

Cruise Itineraries Completed During the Bureau of Commercial Fisheries 1956-58 South Atlantic Fisheries Explorations

Vessel	Dates	Areas of Coverage	Depth Ranges Fathoms
Pelican	Mar. 1-29, 1956	St. Augustine to Cape Canaveral	5-235
Pelican	Apr. 5-10, 1956	St. Augustine to Ft. Pierce	21-212
Pelican	Apr. 23-28, 1956	St. Augustine to Savannah	13-250
Pelican	May 1-22, 1956	St. Augustine	160-242
Pelican	June 8-14, 1956	St. Augustine to Ft. Pierce	153-250
Pelican	June 20-27, 1956	Georgetown, S. C., to St. Augustine	167-252
Combat	July 27-31, 1956	St. Augustine to Ft. Pierce	175-250
Combat	Aug. 6-10, 1956	St. Augustine to Ft. Pierce	170-210
Combat	Aug. 16-22, 1956	Jacksonville to St. Augustine	16-190
Combat	Aug. 30-Sept. 4, 1956	Jacksonville to Cape Canaveral	13-190
Combat	Sept. 13-19, 1956	St. Augustine to Ft. Pierce	150-215
Combat	Oct. 2-4, 1956	St. Augustine	170-200
Combat	Oct. 18-21, 1956	St. Augustine to Daytona Beach	180-230
Combat	Oct. 31-Nov. 19, 1956	Brunswick to Cape Hatteras	18-250
Combat	Dec. 5-6, 1956	Daytona Beach	180-220
Combat	Jan. 8-16, 1957	St. Augustine to New Smyrna	17-230
Combat	Jan. 28-Feb. 6, 1957	New Smyrna to Stuart and northern edge of Little Bahama Bank	175-250
Combat	Feb. 27-Mar. 16, 1957	Miami to Dry Tortugas	185-230
Combat	Apr. 17-30, 1957	Cape Fear to Cape Canaveral	13-250
Combat	May 29-June 3, 1957	St. Augustine to Cape Canaveral	18-225
Combat	June 12-27, 1957	Charleston to Cape Hatteras	21-225
Combat	July 17-30, 1957	St. Augustine to Key West and along western edge of Bahamas	40-565
Combat	Aug. 13-20, 1957	Jacksonville to Ormond Beach	20-230
Combat	Sept. 12-13, 1957	St. Augustine to Daytona Beach	180-210
Combat	Oct. 2-10, 1957	Brunswick to Charleston	6-100
Silver Bay	Nov. 20-30, 1957	South of Cape Canaveral to St. Augustine	6-250
Silver Bay	Dec. 2-4, 1957	North and South of Cape Canaveral	6-210
Silver Bay	June 8-23, 1958	Jupiter Inlet to Jacksonville	4-590
Silver Bay	June 24-28, 1958	Delray Beach to Florida Straits	10-15

In March 1957, explorations were started with the Pelican from Jacksonville, Fla. Program and operational supervision was carried out by the Bureau's Gulf Fisheries Exploration and Gear Research Office, Pascagoula, Miss. Then followed exploration by the vessels Combat and Silver Bay (see insert). In addition to these cruises, the Bureau's vessel George M. Bowers carried out shallow-water trawling for supplementary information during January-March 1956 between Jacksonville, Fla., and Cape Fear, N. C.

During the course of the exploratory work, periodic cruise reports were issued covering the current operations.

DESCRIPTION OF VESSELS USED IN EXPLORATORY TRAWLING

During the program, three vessels were chartered by the Bureau for exploratory trawling: the M/V Pelican,[1] M/V Combat, and M/V Silver Bay. Two of these vessels were engaged in commercial shrimp trawling and one in groundfish trawling at the time they were chartered. The Pelican was used in the first phases of the work (February through June 1956). In July 1956, the Combat was obtained and continued through October 1957. The study was concluded with the December 1957 and June 1958 cruises of the Silver Bay.

M/V "PELICAN": The Pelican is a steel-constructed (70 feet long with a beam of 20 feet) conventional design offshore shrimp trawler (fig. 1). It was built in Tampa, Fla., in 1953, and was powered with a Diesel engine developing 170 hp. at 1600 r.p.m. The rigging was for conventional shrimp trawling, and a number of changes were required for the contemplated deep-water work.

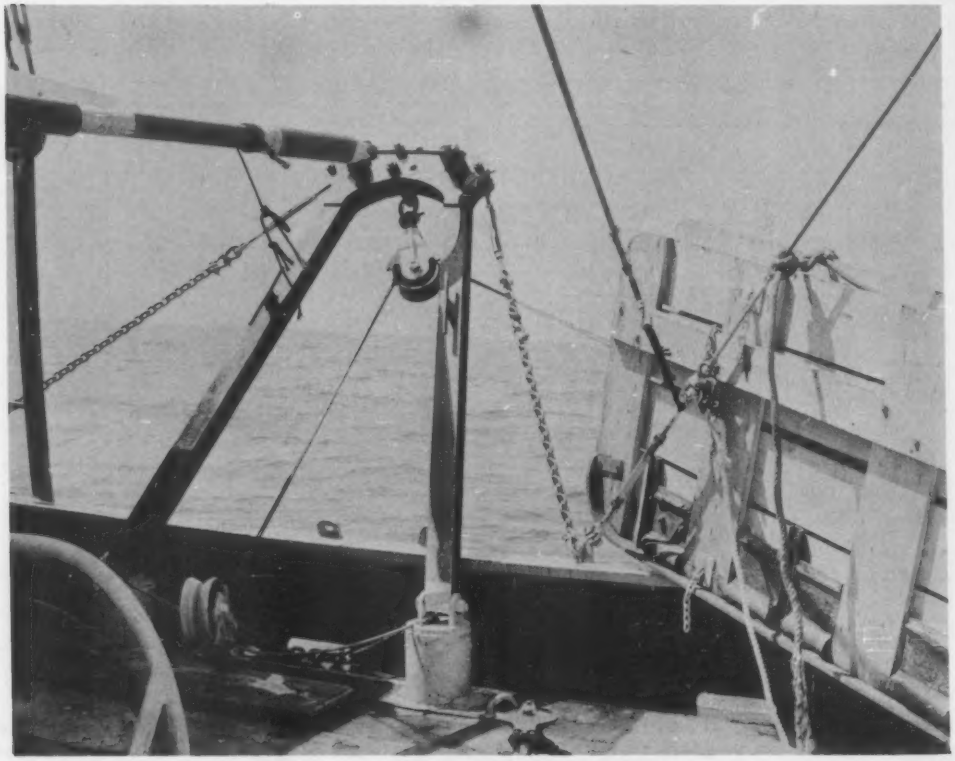

Fig. 3 - Gallows frame arrangement on M/V Pelican.

The smaller winch was replaced with a two-drum winch, with a capacity of 840 fathoms of $\frac{3}{8}$-inch diameter wire rope per drum (fig. 2). The new winch was mounted fore and aft, about 5-feet to port from the centerline, and was powered by a main engine take-off. One of the drums held 750 to 800 fathoms of $\frac{3}{8}$-inch diameter wire rope for towing the 40-foot exploratory nets, and 650 fathoms of $\frac{1}{2}$-inch diameter wire rope for larger trawls was carried on the other drum. An A-frame gallows

1/Not the same M/V Pelican used in the earlier surveys in the Gulf of Mexico and along the South Atlantic Coast (Anderson 1956).

was mounted on the starboard side (about amidships) directly opposite the winch (fig. 3).

The wire-rope trawling cable was rove through a 9-inch x 4-inch hanging bollard blocks secured to the deck by a pad-eye, and a second similar block hung from the gallows. A guide bar was used for level-winding the cable on the winch drum.

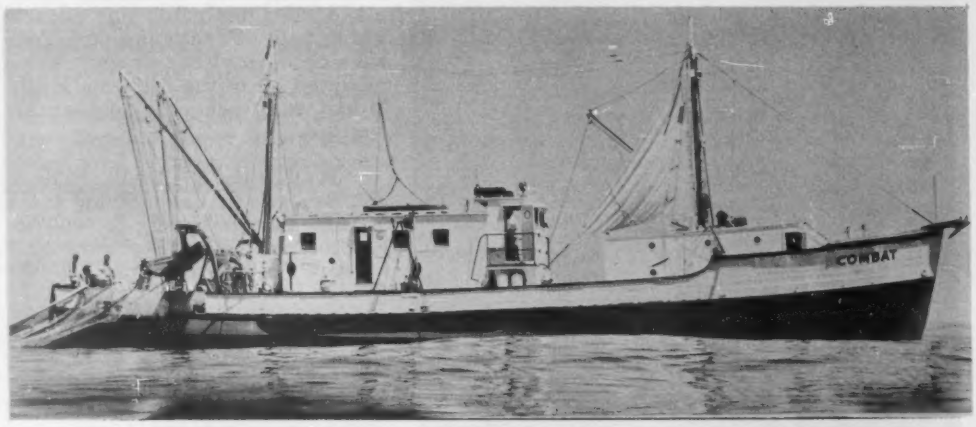

Fig. 4 - M/V Combat used during exploratory fishing program along South Atlantic Coast during 1956-57.

A chock was welded to the stern rail on the starboard side to hold the cable while trawling. The cost of these rigging changes including new equipment and wire rope was approximately $3,500.

The vessel came equipped with loran, radiotelephone, and a shallow-water depth recorder. In addition, a recording depth-sounder with a range of 700 fathoms was installed.

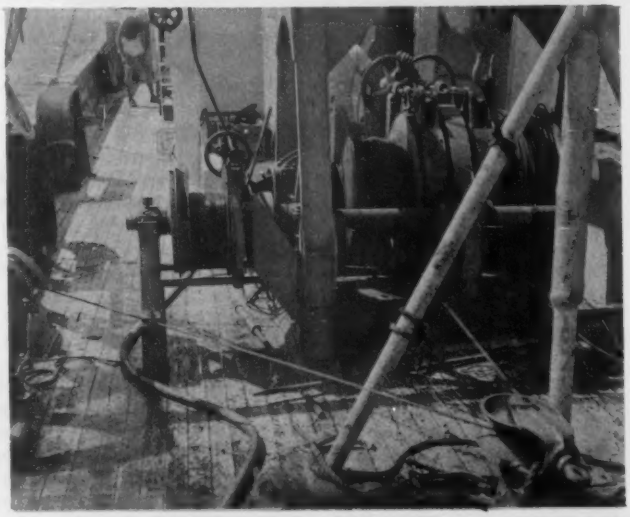

Fig. 5 - Afterdeck and winch arrangement, M/V Combat.

M/V "COMBAT": The Combat, built in 1942, was converted from a United States Navy mine-sweeper (AMc) to a trawler in 1955 (fig. 4). The vessel was 97 feet long with a beam of 21.1 feet and a draft of 10.5 feet. The hull construction was of wood. The main engine supplied 585 hp., and the cruising speed was about 10.5 knots. The electrical system provided 110 and 32 volts; and latter was used for the operation of electronic equipment. This included two radiotelephones, two loran sets, radiodirection finder, automatic pilot, and two depth-recorders which had ranges of 0-200 and 0-700 fathoms.

The vessel had accommodations for 11 men. The normal U. S. Bureau of Commercial Fisheries crew consisted of seven, including two scientific personnel.

A 20-foot x 28-foot holding room could hold up to 70,000 pounds of frozen fishery products at -15° F. Two 10-hp. Diesels operated the compressors which refrigerated six banks of plates in the holding room.

The Combat had been rigged with stern davits and when desirable was capable of pulling two trawls simultaneously. A winch, which held 650 fathoms of $\frac{1}{2}$-inch wire on each of two drums, was mounted aft of the pilot house (fig. 5) and was powered by a separate engine.

Fig. 6 - M/V Silver Bay--a 96.4-foot New England-type side trawler used to terminate royal-red shrimp explorations along the South Atlantic Coast.

M/V "SILVER BAY": The Silver Bay was utilized during the fall of 1957 and the spring of 1958 to supplement the earlier work by the vessels Pelican and Combat.

The Silver Bay, built in 1946, is a steel-constructed New England-type trawler, 96.4 feet in length with a beam of 22.6 feet and a draft of 12 feet (fig. 6). The main engine develops 562 hp. at 350 r.p.m.

Vessel equipment includes a large winch, which holds 650 fathoms of $\frac{11}{16}$-inch wire rope. The trawl is shot from a gallows rig which consists of gallows frames mounted fore and aft. Fishing may be carried on from either the port or starboard sides. Loran equipment is provided in addition to depth-recorder, radio, telephone, radar, and automatic pilot.

Accommodations are available for 16 men. Water and fuel capacity limit continuous operation to about 20 days. The main hold is not refrigerated and ice must be carried to preserve any catch.

GEAR AND METHODS

Since the greatest amount of trawl coverage was carried on the royal-red shrimp range, certain unique factors had to be considered in the operations. Depth and current were perhaps the most outstanding in this category. Generally speaking, fishing in depths of 150-230 fathoms was readily accomplished with only minor adaptations to conventional inshore shrimping gear. The use of a single towing cable with a bridle (25-35 fathoms in length) was the most distinct departure from methods in general use in the established fishery. During limited trials the Combat used two cables; however, these attempts were inconclusive in determining whether or not increased efficiency of the net resulted. Aluminum alloy floats were used in lieu of the more conventional plastic type which were crushed by the pressures encountered at over 150 fathoms. The amount of cable needed to fish successfully in these depths followed the 3 to 1 ratio, that is, for trawling in depths of 200 fathoms about 600 fathoms of cable were put out (in addition to the bridle).

Current fluctuations encountered throughout the area posed the most difficult obstacle in gear operation. It was by no means unusual to encounter surface cur-

rents exceeding 3 knots. Towing the trawl with the current or "fair tide" was not considered satisfactory, since steerage way was difficult or impossible to maintain, resulting in an inability to hold the proper depth range. In general, the 170 hp. of the Pelican was insufficient for counter-current trawling, and most of the work done with this vessel was down-current. Unless the current speed was considered negligible, all fishing in the royal-red shrimp range with the Combat was done counter-current (fig. 7). With this as a consideration, it becomes necessary to stress the importance of providing adequate power to any vessel designed to operate within the range of the Florida current.

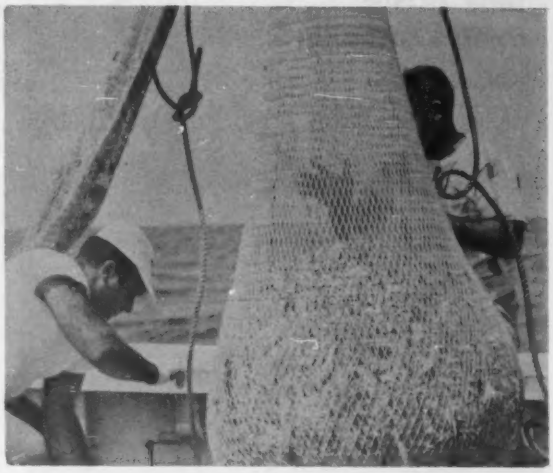

Fig. 7 - Large bag of royal-red shrimp coming aboard the M/V Combat.

Attempts to drag with the current were sometimes further hampered by blocking of the depth-recorder. At times the forward motion of the vessel would be less than the speed of the current, and the agitated water or propeller wash, being carried past the depth-recorder transducer on the bottom of the hull, caused interference that made accurate bottom recordings difficult or impossible to obtain.

When setting the gear, the net was put over, the brake was released from the winch drum, and the vessel proceeded in the general direction of the drag at about three-quarter speed. When the desired amount of cable was put out, the forward motion of the vessel was reduced to a minimum, giving the trawl about 10-15 minutes to reach bottom. After a loran fix was taken, the vessel speed was increased to the point at which the net would be moving over the bottom at approximately 3 knots.

With few exceptions standard 40-foot flat trawls, constructed of 21-thread cotton webbing with 2-inch and $2\frac{1}{4}$-inch stretched mesh, were used for this exploratory work. Occasionally, 55-foot and 65-foot balloon-type trawls were used. For the most part, either $5\frac{1}{2}$-foot northern-type bracket doors, or 5-foot chain-type doors were used in conjunction with 40- to 65-foot trawls. The chain doors performed well when constructed with extra-heavy runners; the bracket doors were used as received from the manufacturer and proved to be entirely satisfactory. The bridle of $\frac{3}{8}$-inch wire rope was attached to the trawling cable by a $\frac{1}{2}$-inch chain swivel.

The depth-recorder used aboard both the Pelican and Combat provided a continuous tracing of the bottom in depths down to 700 fathoms. Whenever practicable, any area not previously trawled would be recorder-surveyed for the purpose of locating bottom obstacles which might be a hazard to fishing gear. Once the bottom had been surveyed, 1- to 3-hour (fishing time) trial drags were made. Whenever possible drags would be carried on for at least two hours. It took 45 minutes to retrieve the trawl from depths of 200 fathoms.

AREA COVERED INCLUDING PHYSICAL ASPECTS

Bottom topography between Cape Hatteras and the Florida Keys displays considerable variation in both form and consistency. Off southern Florida the distance from shore to the 100-fathom curve (the edge of the Continental Shelf) is at many points less than 10 miles. At Cape Hatteras the 100-fathom curve is about 10 miles

offshore and the 1,000-fathom curve is less than 30 miles from the beach. Between north Florida and Cape Lookout the distance from shore to 100 fathoms varies from about 30 to 70 miles, and much of this shelf area is composed primarily of coarse sand. Throughout the entire area, the Florida Current (a portion of the Gulf Stream system) closely parallels the edge of the Continental Shelf.

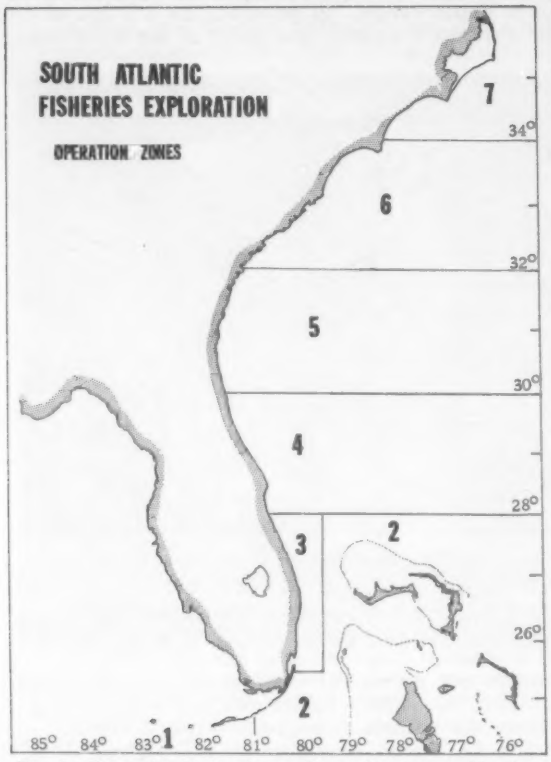

Fig. 8 - Geographic limits of zones discussed and covered by the exploratory fishing described in this article.

For the purpose of discussion, the coast from Cape Hatteras to Key Largo has arbitrarily been divided into sections (fig. 8). A total of 672 trawl stations were attempted between February 1956 and July 1958. More than two-thirds of these were made in depths over 150 fathoms. Of the remainder, most were made in depths of 50 fathoms or less.

AREA 1: KEY WEST-DRY TORTUGAS: This section of the Gulf of Mexico was explored for royal-red shrimp potential by the Bureau's M/V Oregon prior to the work now under discussion. Early in 1957 the Combat carried on additional exploratory work within the royal-red shrimp range (fig. 9). The nature of the bottom, and the currents are discussed in detail by Bullis (1956).

AREA 2: FLORIDA STRAITS-BAHAMA BANKS: This sub-division includes the Florida Keys east of 81° W. longitude, as far north as Elliot Key and the eastern portion of the Florida Straits adjacent to the Bahama Banks. This section is strongly affected by the action of the Florida Current, which greatly hampers trawling operations throughout its range. For example, east of Fowey Rocks the average surface velocity exceeds 3 knots, and it is not unusual to experience surface velocities in excess of 5 knots. For the most part, the Continental Shelf in this area is relatively narrow and the slope from 100-250 fathoms is steep and rugged, with numerous jagged limestone and coral peaks interfering with trawling operations (fig. 10). A third set of factors existing here which tend to confuse exploratory efforts are the contrasting temperatures and bottom conditions encountered along the east and west sides of the Florida Straits. The temperatures adjacent to the Bahama-Cay Sal Bank areas ranged

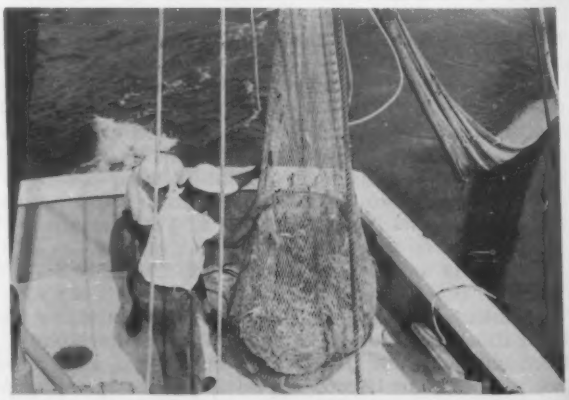

Fig. 9 - Catch of exploratory drag being emptied on stern deck M/V Combat.

from 6° to 14° F. warmer than in comparable depths (200-300 fathoms) along the western edge of the Florida Current. The bottom adjacent to the Bahama Banks in depths of 200-300 fathoms is typically composed of white calcareous mud with occasional patches of coral. By contrast, the bottom conditions encountered at the same depths in close proximity to the Florida coast consist primarily of green mud similar in general appearance to the bottom found in these depths along the Continental Slope further north.

AREA 3: SOUTHEASTERN FLORIDA COAST: This small subdivision embraces the waters adjacent to the southeastern coast of Florida. It extends southward from Malabar (latitude 28°00' N.) to a point just south of Fowey Rocks (latitude 25°30' N.).

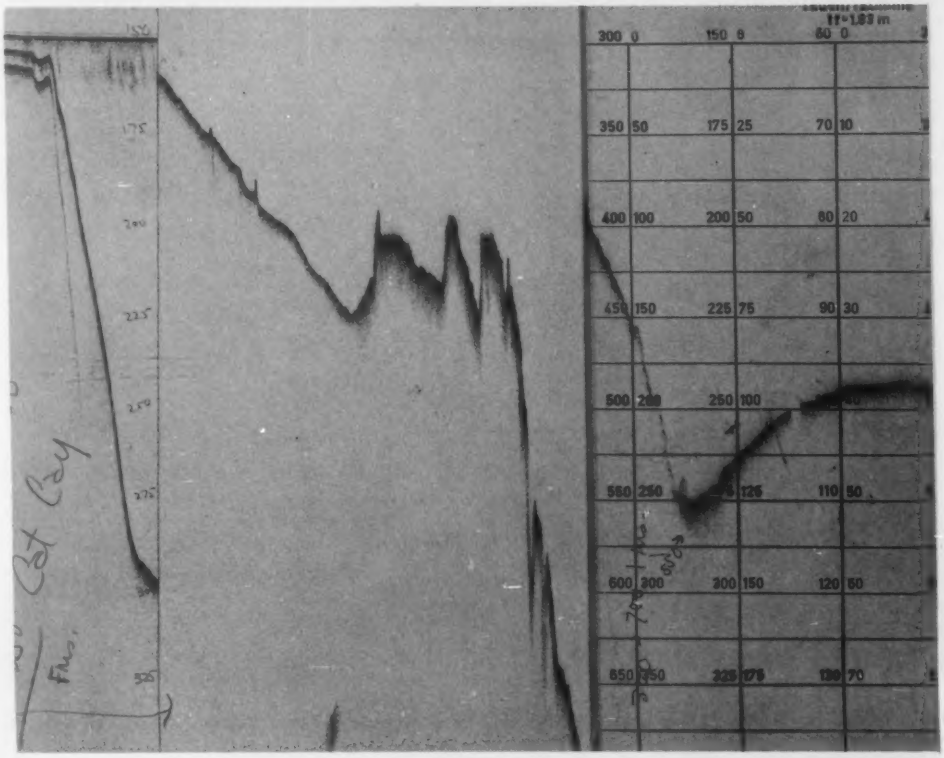

Fig. 10 - Depth-recording made sailing across Straits of Florida from Miami eastward. Middle portion of tracing illustrates the drop-off from 150 to 350 fathoms.

Throughout this area, particularly unfavorable trawling conditions persist. The Florida current reaches its maximum velocities within these boundaries. The Continental Shelf is extremely narrow. Concentrations of live coral and jagged limestone formations are the outstanding bottom characteristics (fig. 11).

Although occasional attempts were made to trawl in this area, most of these resulted in heavy gear damage. In addition to the effect of the currents and the poor trawling circumstances found here, unusually heavy convergence of shipping activity further complicates efforts to fish in these waters.

AREA 4: ST. AUGUSTINE-CAPE CANAVERAL: This portion received by far the greatest amount of coverage. Of the 672 trawl stations made between Cape Hatteras and the Florida Keys, 405 were made between latitudes 30° N. and 28° N.

150 Fathoms and Greater: A total of 340 trawl stations were occupied in this segment, and of these, 302 were made between 29° N. latitude and 30° N. latitude. With the exception of a small patch of rough bottom between 29°55' N. and 30° N., the bottom is relatively free of trawling hazards. For the most part, the bottom between

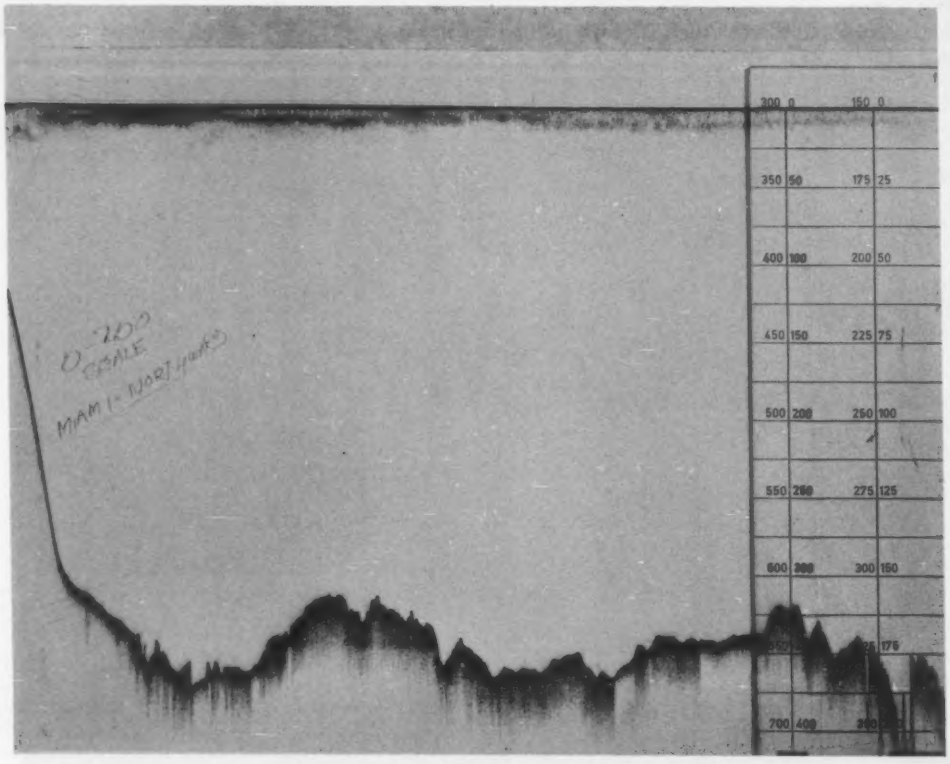

Fig. 11 - Depth-recording made in royal-red shrimp range east of Miami Beach, Fla. This type of bottom is not trawlable with conventional shrimp trawls.

150 and 250 fathoms consists of green mud and provides excellent trawling bottom (figs. 12 and 13). On occasion, the trawl would bog; however, in most cases when this occurred, it was observed that the vessel speed had been allowed to fall below the desired trawling rate of 3-knots ground speed.

An important factor at this location is the variable nature of the current speed and the flow here, on occasions, reaches velocities of at least 3 knots. A constant surveillance of its effect on trawling speed is required. Hourly checks were made by loran fix to insure a trawling speed of 2.5-3 knots over the bottom. When the vessel speed was observed to vary significantly from these speeds, a suitable allowance was made by increasing or decreasing the engine acceleration.

Variations in the force, direction, and relative position of the current have been observed to occur in short periods of time. No correlation is obvious between the local weather and the actions of the current.

In addition to the effect of the current on vessel speed, a second factor was apparent. Whenever the direction of the wind is from a northerly point, and if its velocity reaches a speed in excess of 20 knots, an unusually difficult sea is built up against the north or northeast flow of the surface waters. Since strong northerly winds are common between September and May, the resultant sea conditions frequently force curtailment of fishing operations until the wind moderates.

In June 1958, the Silver Bay made 13 drags beyond the 300-fathom curve (out to depths of 590 fathoms) and found that this depth range is practically untrawlable with conventional shrimp gear. Extensive patches of the deep-sea coral (Lophelia prolifera) predominate and contact with these invariably resulted in gear loss or extensive damage.

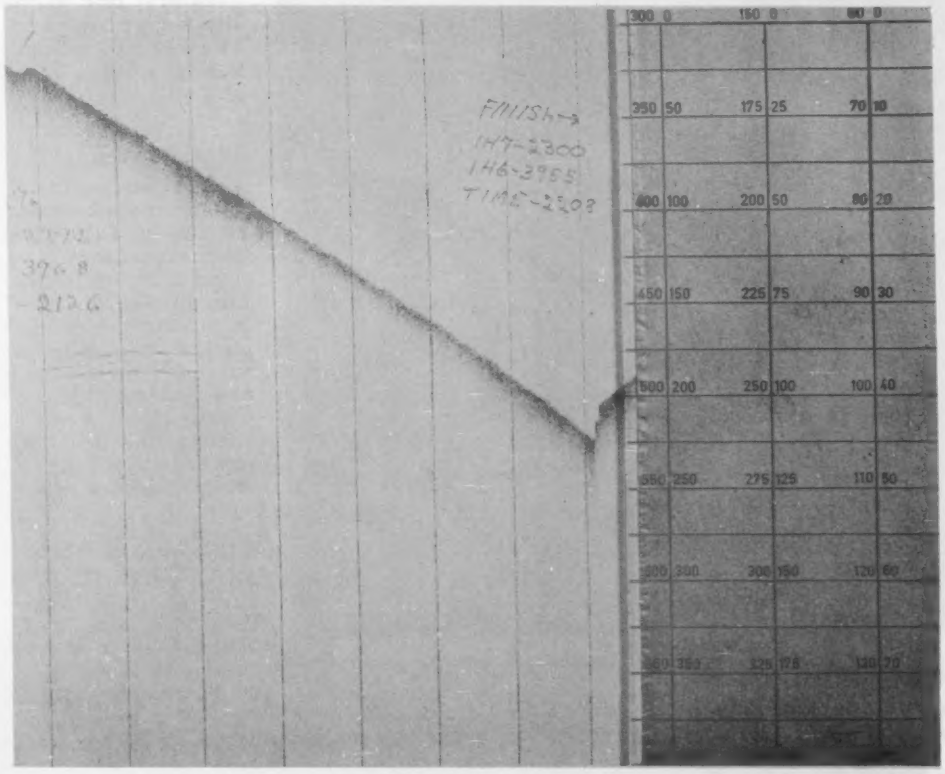

Fig. 12 - East-West transect from 160-260 fathoms at southern edge of royal-red shrimp grounds off east coast of Florida.

Coverage in Less than 150 Fathoms: Relatively good trawling coverage was given to areas inside the 150-fathom curve. In particular, the shelf waters adjacent to Cape Canaveral and east of the St. John's River entrance received considerable attention. Much of the shelf, inside 20 fathoms there, consists of sand with occasional impairment to trawling by isolated limestone outcroppings and concentrations of sea fans. Between the 20- and 100-fathom curves, much of the bottom is dominated by rugged coral formations and sponge which make trawling difficult or impossible with conventional gear.

AREA 5: SAVANNAH, GA.-ST. AUGUSTINE, FLA.: This zone received considerable effort, and it is particularly interesting to note that much of the shelf between

latitudes 32° N. and 30° N. displays a typical "tropical" fauna. Although many of the fishes and invertebrates generally considered to be tropical occur further to the north, it is at about the latitude of northern Florida where such forms as the massive loggerhead sponges and many of the reef fishes are relatively common.

150 Fathoms and Greater: The offshore area between Savannah, Ga., and St. Augustine, Fla., is characterized by extremely irregular bottom. Attempts to drag on the Continental Slope here were often interrupted by severe rises or depressions which made it compulsory to haul back the gear to prevent damage. Occasional samples of the bottom brought up in the trawl consisted of smooth limestone rock, known to the fishermen as "slab rock." Twenty-three drags were attempted at depths of 150 fathoms or greater. Due to the limited amount of trawlable bottom, however, most were of short duration.

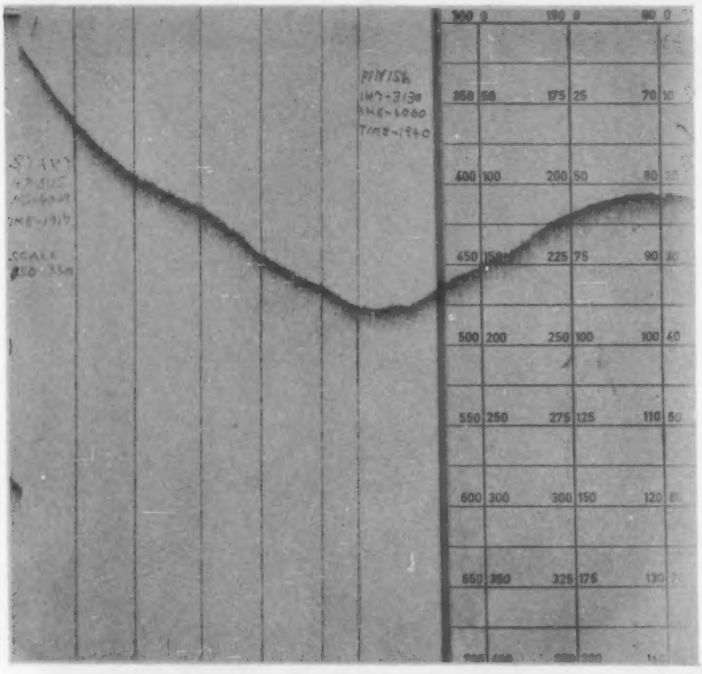

Fig. 13 - East-west transect from 160-240 fathoms at northern limit of royal-red shrimp grounds off east coast of Florida.

Less than 150 Fathoms: Sixty-two drags were made, most of these between 25 and 40 fathoms. There are large portions of trawlable bottom in this section. It is, for the most part, composed of sand and shell. There are also sporadic patches of coral, sponge, and sea-fan communities which often cause net damage.

AREA 6: CAPE FEAR-SAVANNAH, GA: In this division, the Continental Shelf reaches its greatest breadth along the southeastern seaboard of the United States. From a point at the latitude of Georgetown, S. C., the distance, in an easterly direction to the 100-fathom curve is over 100 miles.

150 Fathoms and Greater: At a point in the vicinity of latitude 33° N., the distance between the 150-fathom and 250-fathom curves reaches a width of about 20 miles. This distance is the greatest between these depth ranges for any point along the entire region from Cape Hatteras to South Florida. For the most part, the bottom between 150 and 250 fathoms in this subdivision is composed of mud and sand and trawling is usually possible. A total of 31 drags was made at depths greater than 150 fathoms in this section (fig. 14). Six of these resulted in serious gear damage.

Less than 150 Fathoms: The shelf along here is gradual and composed chiefly of sand and shell. Intermittent ridges of dead shell (mostly Pecten gibbus) and occasional mud patches characterize the depths from 20-50 fathoms. In the vicinity of the 50-fathom curve sporadic rocky spots interfered with trawling. Between 11

and 150 fathoms a total of 20 trawl drags was made. The coverage accomplished by these is not truly respresentative of this portion of the shelf.

AREA 7: NORTH CAROLINA CAPES: Two exploratory cruises by the Combat were carried out in this section. One of these was made during the fall of 1956 and the other during June 1957.

150 Fathoms and Greater: The nature of the Continental Slope between Cape Hatteras and Cape Fear hampered trawling operations. The slope between these points is steep and occasionally rocky resulting in considerable loss of gear. The bottom types along this portion are variable with alternating stretches of sand, mud, coral and gravel mixed with large rocks. Although there is some good trawling bottom (fig. 15), it is not extensive.

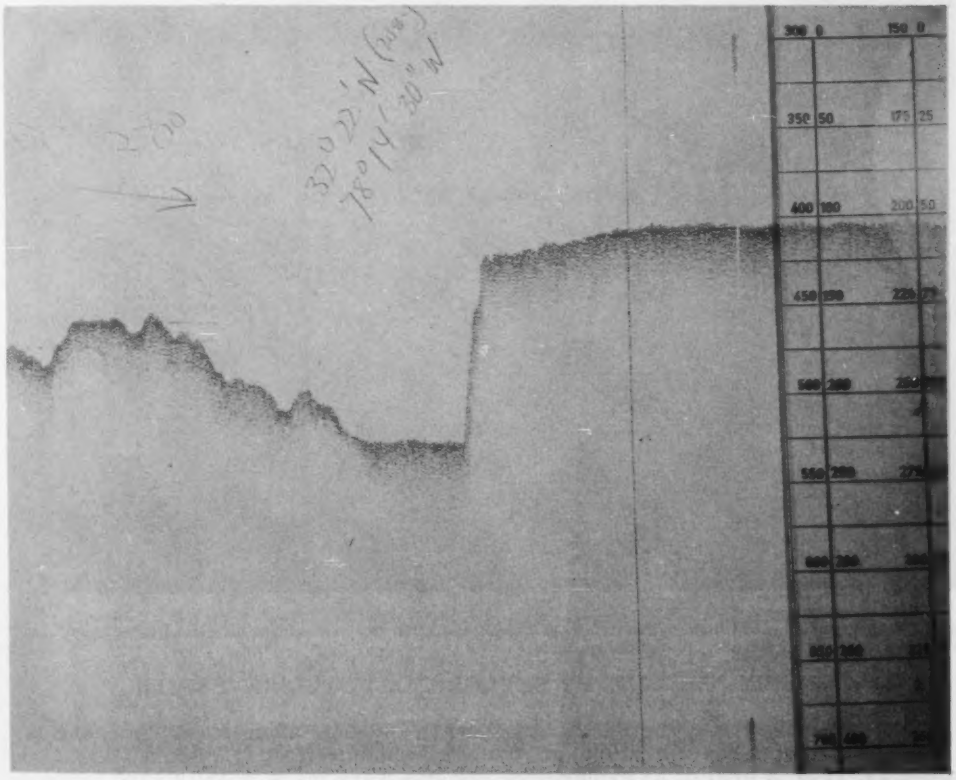

Fig. 14 - Depth-recording of bottom east of Beaufort, S. C. (150-350 fathom scale).

Although the northerly flow of the Gulf Stream system is less pronounced north of Cape Fear as compared with the area to the south, current did influence trawling operations in deep water as far north as Cape Hatteras.

Less than 150 Fathoms: Forty-two drags were attempted in depths of less than 150 fathoms. All trawling in these depths was carried on between Cape Lookout and Cape Hatteras. In this vicinity the slope of the shelf is gradual between 25 and 40 fathoms. Trawling conditions are relatively good out to the 40-fathom curve. Most of the bottom in this range consists of sand with some shell and only occasional

patches of hard bottom. By contrast, from about the 40-fathom depth contour seaward, the slope of the bottom increases sharply and is characterized by sometimes rugged bottom, showing little prospect of trawling with conventional shrimp fishing gear. No coverage was attempted to the south and west of Cape Lookout inside 150 fathoms. Some of this has been covered by other programs (Buller 1951: Institute of Fisheries Research 1951).

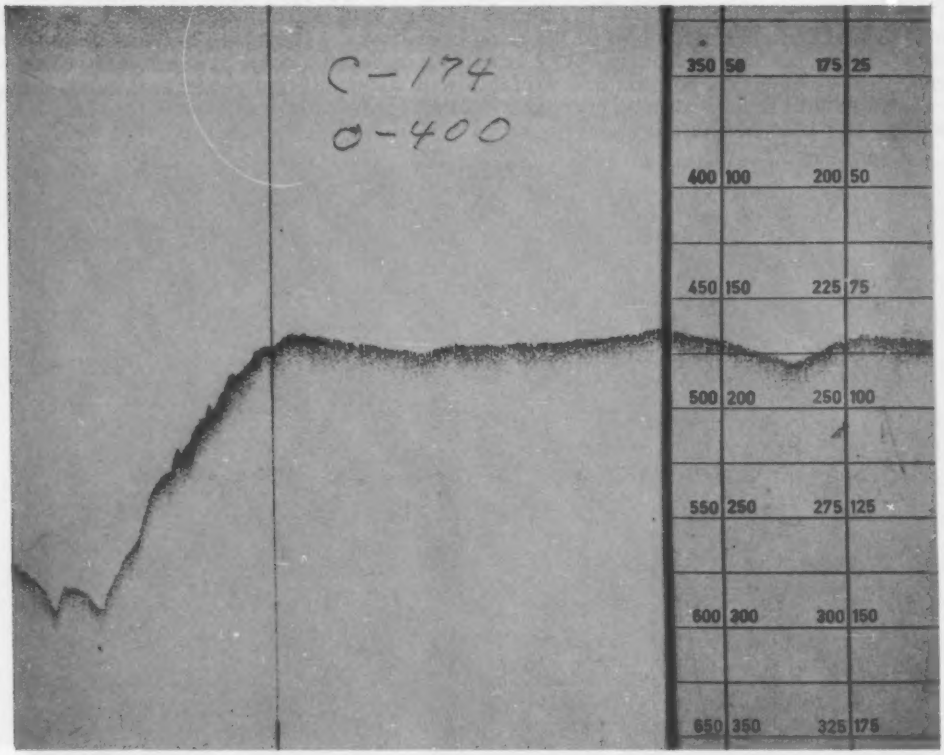

Fig. 15 - Depth-recording of bottom in the vicinity of Cape Hatteras, N. C.; vertical line indicates start of drag C-174 which was made at 175 fathoms. (0-400 fathom scale.)

FISHING RESULTS BY EXPLORATORY FISHING VESSELS

The first attempts by the Pelican to trawl in 180-235 fathoms were successful in finding promising concentrations of royal-red shrimp (fig. 16). From March 2 to June 14, 1956, a total of 55 exploratory stations were made in 150 to 250 fathoms from Cape Canaveral to St. Augustine, delimiting what appeared to be grounds of commercial potential. In May and June, 25 drags in this area produced 2,700 pounds of royal-red shrimp, with the most productive drags in the 175-212 fathom range off St. Augustine where 3 drags of 4 to 5 hours duration caught 1,020 pounds of heads-on shrimp.

The work of the Combat, starting in July, was directed to more precisely define the area, to obtain seasonal catch information, and to explore to the north and south for possible new royal-red shrimp fishing grounds. Of the 19 trips made by the Combat, 15 were devoted either in part or entirely to work in the St. Augustine to Cape Canaveral area, chiefly between 29° N. and 30° N. latitude.

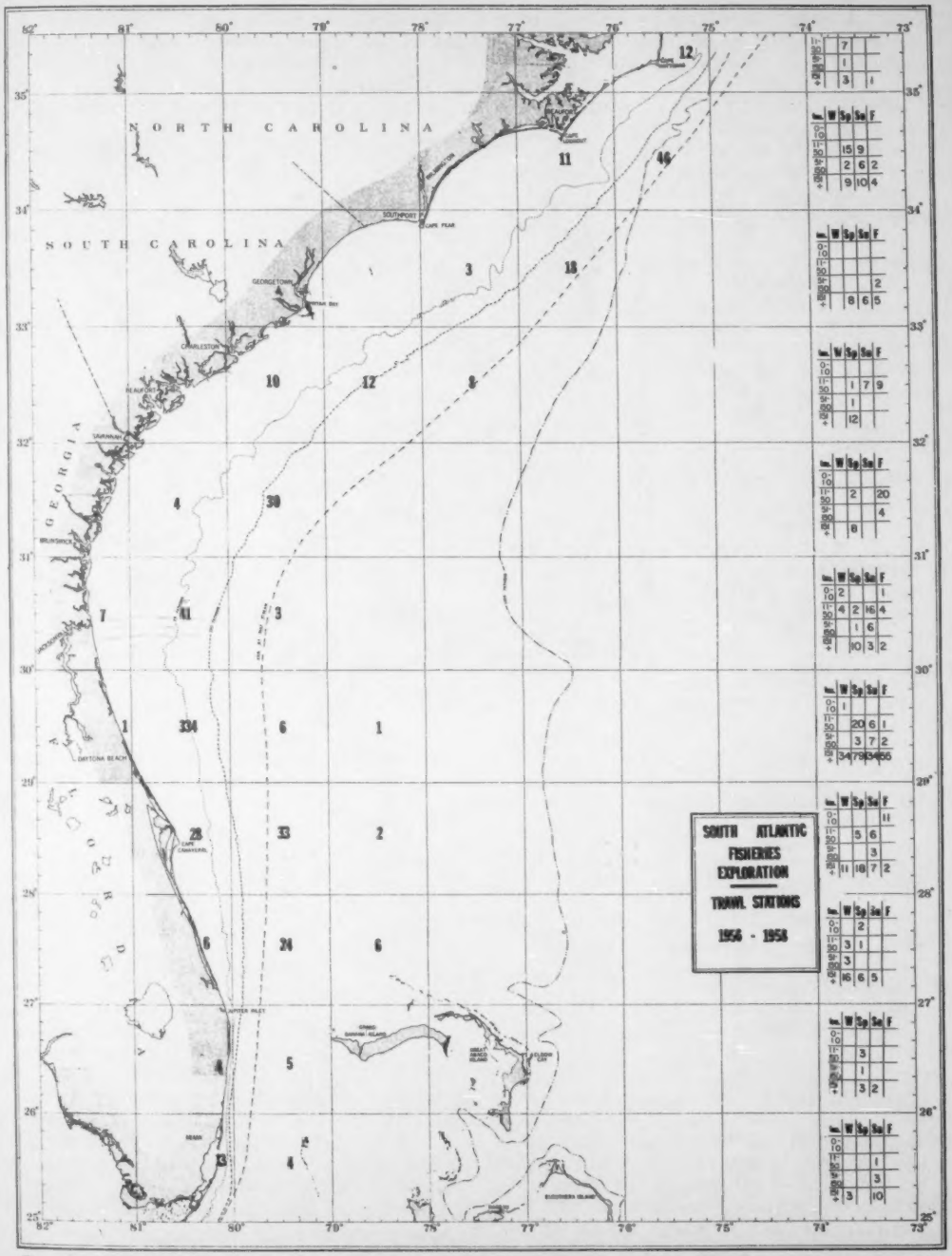

Fig. 16 - Geographic distribution of trawl stations made by the vessels Pelican, Combat, and Silver Bay, from 1956-1958. Numbers within latitude and longitude quadrangles represent the total number of drags made in each quadrangle. Figures on extreme right designate the total drags by season and depth for each degree of latitude.

A summary of the 20 months of trawling operations between 29° N. and 30° N. latitude shows an apparent seasonal shifting of the highest concentrations of shrimp, and some change in availability. Using 40-foot trawl catches for comparison, highest catch rates (75 to 135 pounds of heads-on shrimp per hour) were located between 29° N. and 29°20' N. in the winter. In the spring, catches of 72 to 118 pounds per hour were made between 29°20' N. and 29°45' N. In the summer, catches of 78 to 98 pounds per hour were made near at the northern limit of good trawling bottom, between 29°40' N. and 29°58' N. In the fall, catches of 72 to 82 pounds per hour were made between 29°20' N. and 29°35' N. (fig. 17).

Catch rates of over 50 pounds per hour were found to extend both north and south of the above ranges, and, for the most part, minimal catch rates of 20 pounds per hour were made over the entire area within the 160-220 fathom depth ranges.

Fig. 17 - Portion of royal-red shrimp catch on deck of M/V Combat.

Gear fouling, water hauls (when trawl fails to reach bottom), and loss of gear precluded sustained production at the above rates, which reflect the best 25 percent of total exploratory drags made. Simulated commercial fishing was carried out on several occasions with the following results:

Month	Fishing Days	Total Drags	Successful Drags	40-Foot Trawls Lost	Weight of Shrimp (Heads off)
	(Number)				Lbs.
July 1956	4¼	22	16	0	2,100
Aug. 1956	5	19	16	1	1,700
Sept. 1956	5	25	20	1	1,175
Oct. 1956	1	8	6	0	800
Jan. 1957	2	10	9	0	1,125
Feb. 1957	2	10	9	1	930
Aug. 1957	2	9	9	(65-ft. trawl used)	1,325

Subsequent to the Combat work, the Silver Bay trawled this area in November 1957 and in June 1958. During the November trip, strong winds and strong current nullified most of the fishing effort. The only successful fishing occurred during a two-day lull in the weather when 530 pounds heads-off of royal-red shrimp were landed from seven drags. In June, seven days of trawling produced 2,143 pounds of heads-off royal-red shrimp. Of the 35 drags attempted during this period, 9 resulted in fouled gear or water hauls.

Considerable time was usually spent at the beginning of each trip in locating the best fishing depths and areas. Daily and drag-by-drag fluctuations in the catch rate

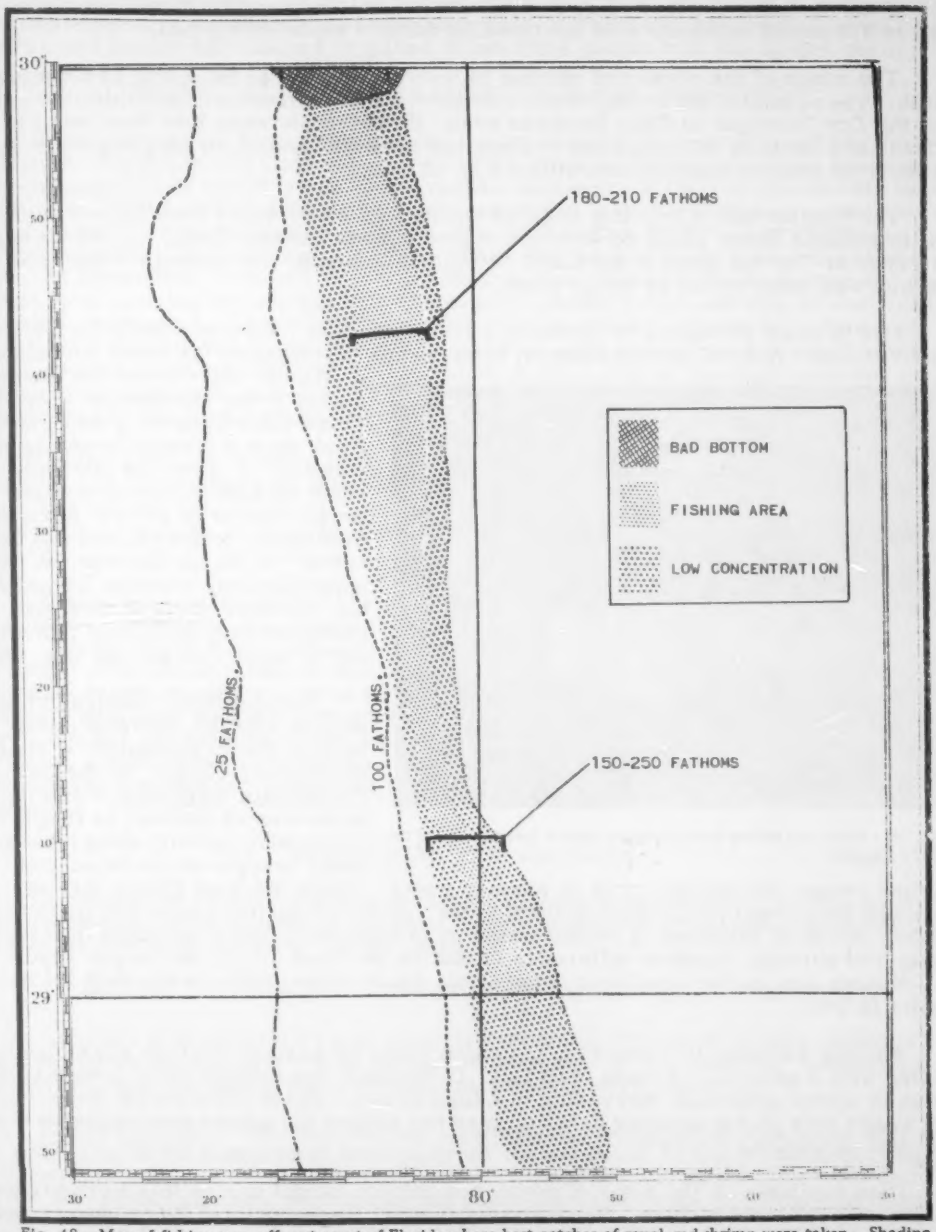

Fig. 18 - Map of fishing area off east coast of Florida where best catches of royal-red shrimp were taken. Shading refers to concentration of royal-red shrimp.

are still unexplained, and may be attributed to variation in gear operation or behavior of the shrimp. Catches of 10 pounds or less are frequently interspersed with 300 to 500-pound catches, with all trawling factors apparently equal.

The range of the royal-red shrimp is known to extend as far north as Georges Bank. The results of these exploratory drags confirm continuous distribution throughout the Dry Tortugas to Cape Hatteras area. However, between Key West and Ft. Pierce and north of St. Augustine to Cape Hatteras the quantities caught gave no indication of commercial concentrations (fig. 18).

The Combat and Silver Bay carried out limited exploratory trawling north of Little Bahama Bank, along the western edge of Grand Bahama Bank, and off the northern edge of Cay Sal Bank in depths of 180 to 590 fathoms. Not a single royal-red shrimp was taken in the 29 drags made.

Due to many problems in obtaining accurate bottom temperatures in the Florida Current under normal circumstances, temperature information for catch correlation is scanty. Eleven bottom temperatures in the 200-fathom range between Cape Canaveral and Cape Fear show a gradual lowering of some $4\frac{1}{2}^{\circ}$ F. over the 300-mile rapid decline in numbers below temperatures of 47° F. Along the east coast, temperatures fall below 47° F. in the 200-fathom range approximately opposite Savannah, Ga. Catches north of this have contained only scattered individuals of royal-red shrimp (fig. 19).

Fig. 19 - Royal-red shrimp being weighed prior to freezing aboard the M/V Combat.

Several other features of the shrimp catches, however, have been in direct opposition to Gulf of Mexico findings. In the Gulf, Penaeopsis megalops, a smaller pink-colored shrimp, is frequently caught in quantity along the shallower margin of the royal-red shrimp range, and consequently in warmer water. Along the East Coast, this species has been observed primarily outside the royal-red shrimp range and in colder water. North of Savannah in colder water, it is apparently more abundant than the royal-red shrimp. Another difference is that on the East Coast, the larger royal-red shrimp are on the shallower edge of the depth range, while in the Gulf the opposite is true.

Another striking difference is that catch rates off eastern Florida were high in winter with a gradual decrease until fall. In the Gulf, the catches show lowest catch rates in winter gradually increasing to a high in fall. These differences, however, are based only on exploratory data and may not reflect the actual availability to commercial operations.

Data available on the sizes of royal-red shrimp caught during this work present a confused seasonal picture. Throughout the year, the majority of the catches ranged between 16 to 20 and 31 to 35 count heads-off, with an average count of 25 per pound However, the differences in sizes between the sexes was very striking, with the males usually less than half the size of the females. An average count for the entire catch would then be materially affected by the sex ratio within the shrimp catch. In the St.

Augustine area, the females ranged between 15 and 25 count and made up over half the catch by total weight. The males ranged from 35 to 50 count. Signs of very small shrimp were obtained during the September 1956 to February 1957 period, when 50 to 70 count (heads-off) catches of mixed sexes were caught with the larger shrimp.

COMMERCIAL FISHING EFFORTS ON ROYAL-RED SHRIMP

Some six vessels have attempted to commercially fish for royal-red shrimp between St. Augustine and Cape Canaveral. This work occurred at various times between August 1956 and May 1957. A complete summary of the various results is not available. Considerable trouble was encountered in trawling in this area because of the Florida current and sea conditions. The first vessel experienced severe fouling of gear and trawling cables while trying to use two cables in the conventional manner. In September, a second vessel made four short trips off St. Augustine and was successful in using two warps, and several good catches were made with 80-foot trawls. Catches averaged some 400 to 500 pounds of heads-off shrimp per day. However, bad weather disrupted operations and this vessel discontinued deep-water fishing. In November, a North Carolina trawler made a short trip to these grounds and reported very large catches of 50 to 60 count royal-red shrimp. Catches of large shrimp were relatively small and fishing was discontinued.

During February to May 1957, from 1 to 5 vessels were in operation. Frequent periods of bad weather kept these vessels in port more than 50 percent of the time and, although an estimated total of over 40,000 pounds of heads-off royal-red shrimp was landed, because of various factors all deep-water shrimp fishing was discontinued.

These initial fishing trials by commercial vessels provided several pieces of valuable information, and indicated several points of importance for any future effort. First, weather conditions prevalent along the eastern Florida coast prevent efficient year-round offshore operation with the conventional shrimp trawler. A suitable vessel would have to be able to work safely in fairly heavy seas. In addition, vessels with less than 200 horsepower experience difficulty in towing counter-current, and for the most part, are able to do so only during periods of slack current. Finally, catches have been variable but a sufficient number of good trips were made to indicate a potentially profitable fishery if continuous fishing effort can be maintained.

INDUSTRIAL FISH CATCHES

Industrial or "scrap" catches in the 200-fathom area varied in amount from a few to several hundred pounds; however, large catches of royal-red shrimp were for the most part quite clean of "scrap" species.

INCIDENTAL SPECIES OF POSSIBLE COMMERCIAL IMPORTANCE

Although principal effort was given to evaluating royal-red shrimp potential, limited coverage was given to areas inside the range of this species. Indications of several species appearing in significant amounts were observed.

ROCK SHRIMP: The rock shrimp (Eusicyonia brevirostris) was taken over a a wide area of the Continental Shelf between the depths of 10 and 80 fathoms. Significant amounts were taken from several locations between Cape Canaveral and Cape Hatteras. The best concentrations observed were in the 22-45-fathom depth range. Off North Florida in 22 and 23 fathoms, good catches of this species were made. One drag (C-101) there produced 150 pounds of rock shrimp after one hour's fishing time.

Farther to the north, up to 40 pounds per hour were taken in 25 fathoms southeast of Cape Lookout, N. C.

Considerable information regarding the distribution of rock shrimp was obtained in earlier work by Anderson (1956) and current explorations being carried on by the vessel T-19 operating out of the Bears Bluff Laboratory at Wadmalaw Island, S. C.

SCALLOPS: The scallop (Pecten gibbus) was taken in varying amounts between Cape Canaveral and the Georgia coast in depths from 20-30 fathoms. On several occasions over two bushels were taken in short drags with a conventional shrimp trawl. A one-hour drag (C-160) off the Florida-Georgia border in 21 fathoms resulted in a catch of 165 pounds of scallops up to 2 inches in diameter.

FLOUNDER: Occasional catches of the flounder (Paralichthys squamilentus) at depths of 60-90 fathoms offer the possibility that further exploration at these depths might uncover concentrations of this species. This flatfish, which is similar to the summer flounder (P. dentatus), reaches a size of over three pounds.

OTHER SPECIES: Intermittent large catches of several species of fish were made while using shrimp trawls. Among species sometimes taken in good numbers along the edge of the Continental Shelf were spot (Leiostomus), croaker (Micropogon), butterfish (Poronotus), hake (Urophycis), and whiting (Merluccius). Approximately 3,000 pounds of spot were taken in one tow off Georgia in 75 fathoms, during early October 1957.

APPENDIX

Complete fishing logs with detailed station records are not included here, but are available upon request as an appendix to the reprint of this article. Write for Separate No. 551, which contains the fishing logs of the vessels which participated in the Bureau's 1956-58 South Atlantic fisheries explorations.

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FLAVOR AND ODOR OF FISH - PROGRESS REPORT

INTRODUCTION

Knowledge of the flavor and odor components of fish products has a direct bearing on numerous problems of fishery technology. Since the odor of fishery products is often used as a subjective method of quality assessment, a better knowledge of the odor components could lead to the development of objective methods for quality assessment. This knowledge could be further utilized to study such questions as species identification through qualitative or quantitative differences in odor components, changes which occur in flavor and odor components on freezing and storage, the composition of off-odors, irradiation odors, flavor loss, and numerous other problems with which fishery technology is concerned.

With the objective of isolating and identifying the chemical components of the flavor and odor of fresh raw fish, an agreement was made March 10, 1958, for a collaborative project between the U. S. Bureau of Commercial Fisheries Fishery Technological Laboratory, East Boston, Mass., and the Analytical Section, Pioneering Research Division, Quartermaster Research and Engineering Command, Natick, Mass.

The experimental work on the project is being performed at the Quartermaster Research and Engineering Laboratories, Natick, Mass., under the direction of the U. S. Bureau of Commercial Fisheries, and the Chief, Analytical Section, Pioneering Research Division, Quartermaster Research and Engineering Command.

METHODS OF INVESTIGATION

The general methods of investigation of an unknown odor, shown in figure 1, were developed by the Analytical Section of the Pioneering Division and have proven highly successful in defining the chemical components in the odors emanating from onions, irradiated beef, insect secretions, and a variety of vegetable products (1, 2, 3). The general method is divided into seven separate steps. Steps 1 and 2 are obvious and need no further explanation. Step 3 consists of low temperature, high vacuum bulb-to-bulb distillation of the composite odor, allowing a separation of widely boiling components, so that when put into the chromatographic column finer separations can be achieved.

Steps 4 and 5 involve the use of gas chromatography for further fractionation of the odor components. The principles involved in the use of gas chromatography have been discussed in numerous publications (4, 5). However, in this application gas chromatography is not used as an analytical technique but simply as an elegant means of separation. This is made possible by attaching a trap to the exit part of the chromatographic column and condensing each fraction as it is eluted. Since we are primarily interested in presenting the contents of the trap for mass spectral analysis, a high vacuum system is used to pump out the carrier gas and leave only the condensables. These are then run on the mass spectrometer.

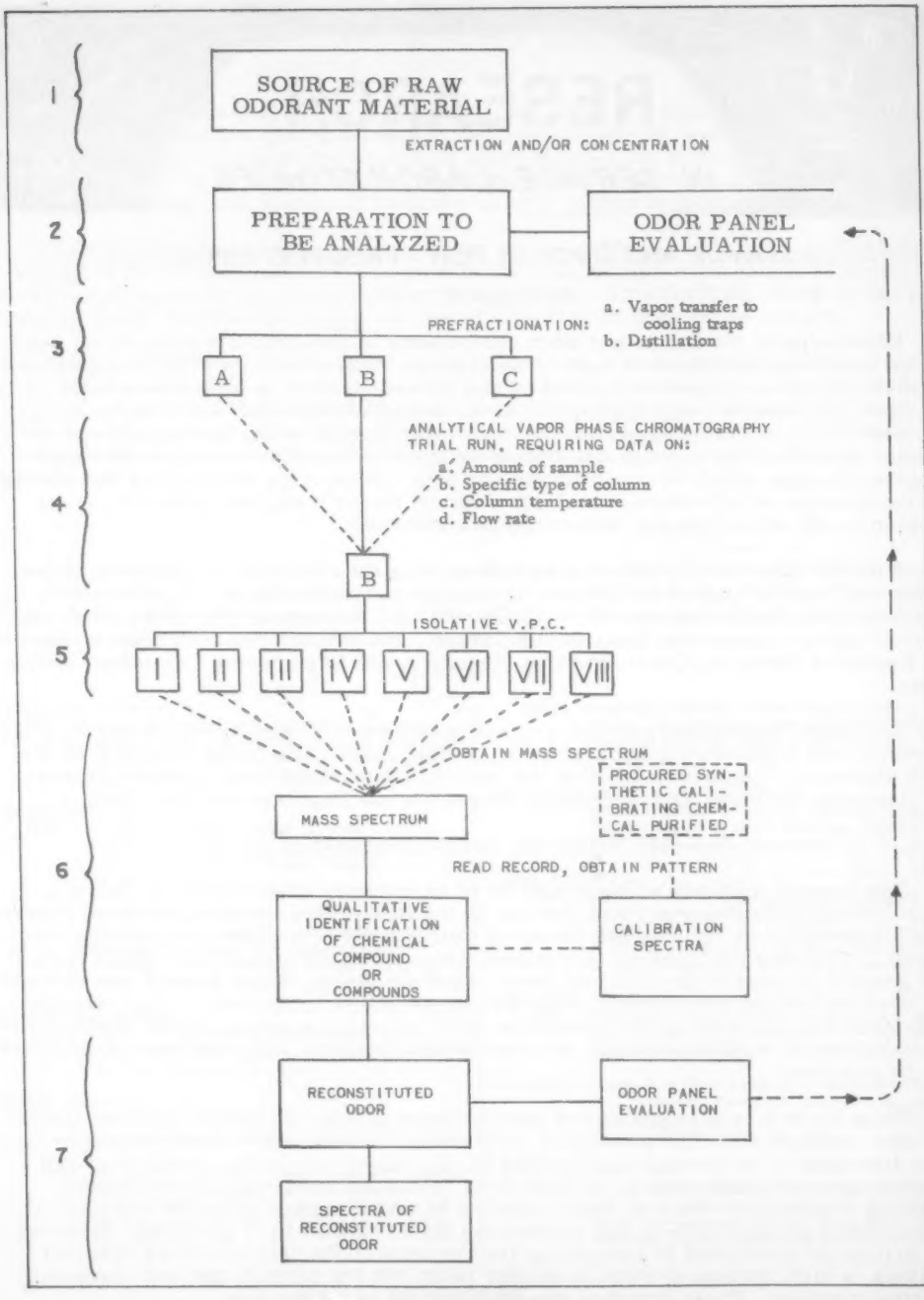

Fig. 1 - Scheme for investigation of an unknown odor.

Figure 2 is a diagram showing the principal parts of a mass spectrometer. The sample, usually in the vapor state, is admitted to the spectrometer through the inlet

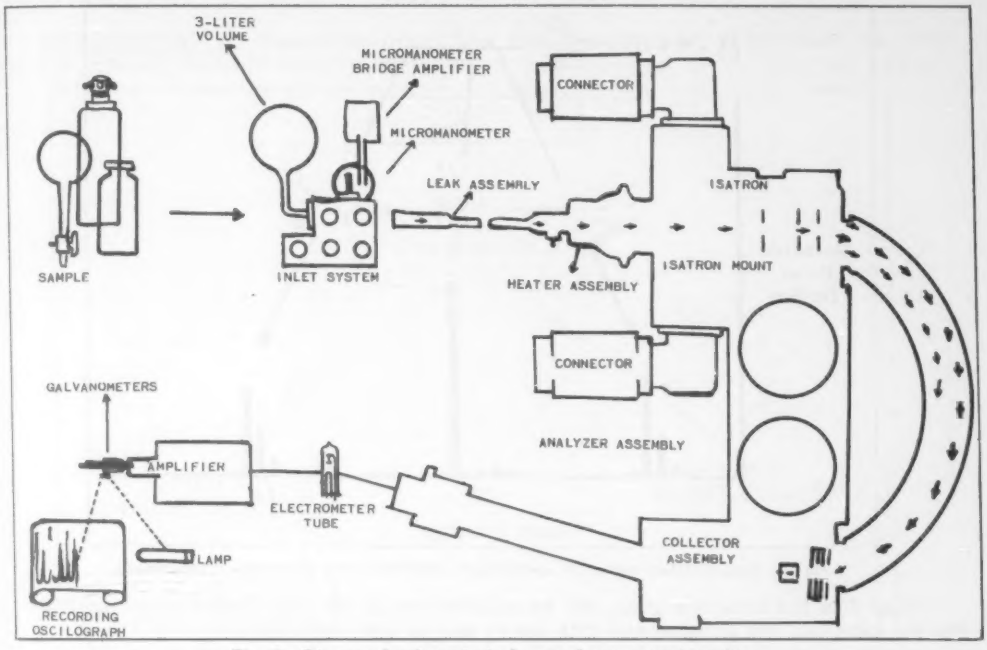

Fig. 2 - Diagram showing principal parts of a mass spectrometer.

system. In the isotron the molecules which are electrically neutral are bombarded by electrons, some become positively charged ions, while others are fragmented and become positively charged fragments. These ions are then accelerated to a high velocity and are sorted according to weight by magnetic means. As each beam of separated ions sweeps across the collector, its intensity is recorded. Figure 3 shows the fragmentation pattern of a simple molecule, acetaldehyde. It is noted that this molecule is broken up into 3 major positively-charged fragments $-CH_3^+$, $-CHO^+$, and a parent mass peak of CH_3CHO^+. The abscissa is fragment mass while the ordinate reflects the comparative quantity of each fragment; thus this relationship is specific for acetaldehyde and no other molecule. Each chemical compound has a pattern unique to it.

There are, however, limitations in the use of the mass spectrometer insofar as identifying food odors is concerned. Under normal operating conditions, that is, without a special heated inlet system, data can only be obtained on compounds up to molecular weight 300. A C_{12} hydrocarbon is typical of the upper limits of usefulness of this spectrometer. A second and more serious limitation is the following: if one has an unknown mixture of 12 components, contributions will be obtained at all mass peaks, and one will be unable to make a start without assuming the presence of a certain compound and thereafter, by dint of laborious calculations, try and fit them into a pattern. Thus in the case of unknown compounds, certain identification is improved by the lesser number of compounds present for mass spectrometric analysis. Again, if only a single pure compound is presented, and although one does not know what it is, a structural analysis of the spectrogram will allow one to predict what it is; this is followed up by comparison to a known standard spectrum, and the identification can be verified. It is for these reasons that preliminary

separation of a complex odor into single compounds or simple mixtures by vapor phase chromatography or low temperature fractional distillation is desirable.

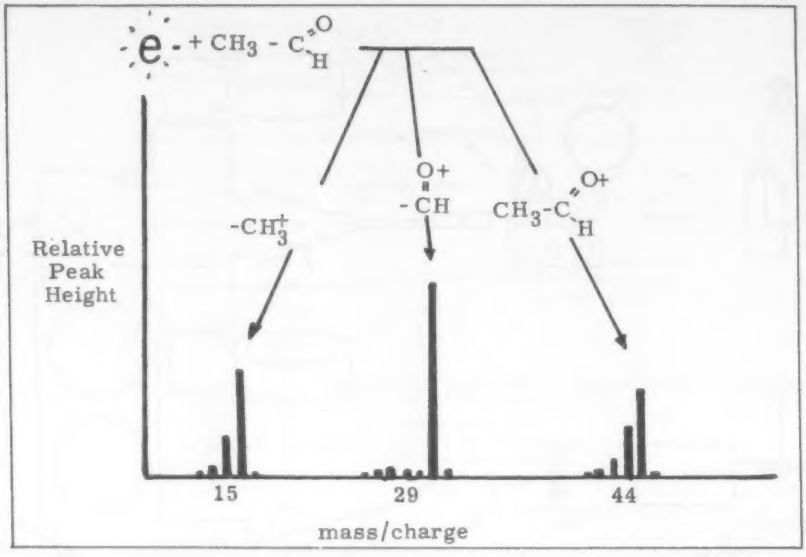

Fig. 3 - Fragmentation pattern of acetaldehyde under influence of electron bombardment.

Step 7 is the ultimate goal, the reconstitution of the odor under investigation. But we have not yet progressed this far in any of our research.

RESULTS

Operating within the framework of the procedures outlined above, the determination of the chemical components of the odor of fish was carried out in three separate experiments.

EXPERIMENT 1: The haddock used in this experiment were in rigor when obtained from a local distributor. The samples were prepared for analysis as soon as they were received. Two-hundred grams of finely chopped fillet were placed in a gas bottle and frozen with liquid nitrogen. Air was then pumped from the sample bottle to a pressure of less than 1 micron. The sample was allowed to come to room temperature and the volatile components from the sample were vacuum distilled into a receiving flask cooled with liquid nitrogen. The distillation was allowed to continue for six hours. The fraction obtained, designated as total condensables, was further fractionated by freezing to -80° C. (-112° F.). The vapors which did not condense at this temperature were collected in a flask cooled by liquid nitrogen. The fraction obtained was designated as the center cut. The center cut was then cooled to -145° C. (-229° F.) and the vapors not condensing at this temperature were collected in another liquid nitrogen trap. This fraction is the carbon dioxide fraction. Figure 4 is a schematic of the fractionating procedure. A photograph of the apparatus used in high-vacuum low temperature fractionation is shown in figure 5.

Mass spectra were then obtained of the fractions separated by the above procedures. Only water vapor and carbon dioxide could be positively identified. However, the mass spectra did indicate the presence of other components in the center cut. Positive identification of these substances could not be made because of their low concentration. Attempts were made to increase the concentration of these substances by doubling the size of the sample and increasing the distillation time.

Considerable difficulty was encountered with these samples due to the large amounts of water in the distillate. Fractionation and analysis of the larger samples gave the same results that were obtained with the smaller samples (6, 7).

EXPERIMENT 2: This experiment was designed in order to increase the number and concentration of odorous material in the total condensable fraction. This

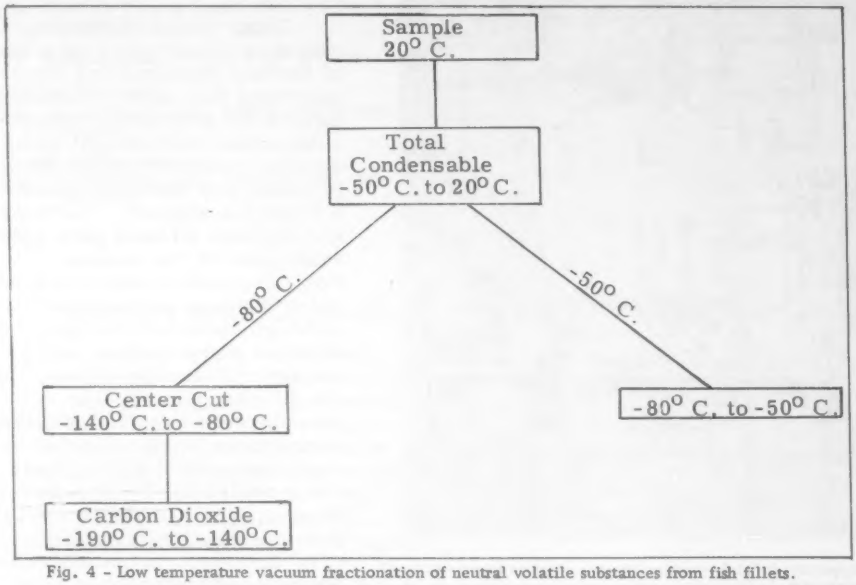

Fig. 4 - Low temperature vacuum fractionation of neutral volatile substances from fish fillets.

was done for two reasons: (1) to test the separation methods, and (2) to obtain some indication of the type of compounds one could expect to find in the neutral volatile distillate.

In this experiment the sample used was 1,500 grams of haddock fillets which had been held at ice temperature (0° C. or 32° F.) for 8 days. The sample was prepared in the same manner as the sample used in Experiment 1 and carried through the same low-temperature, high-vacuum prefractionation procedures. Three compounds could be identified in the center cut from this sample. Positive identification was made of dimethyl sulfide, acetaldehyde, and ethanol. However, these compounds are not unique constituents of fish odor but appear to be present in the volatile fraction of many foodstuffs. Further examination of the total condensable fraction of this sample indicated that most of the fish odor remained in the aqueous residue and was not removed by low temperature fractionation. Solvent extractions of this residue with diethyl ether and isopentane were carried out. It was possible to transfer some of the odorous material to the organic phase. However, attempts to increase the concentration of the odorous material by reducing the volume of solvent were unsuccessful. Most of the odorous material distilled off with the solvent.

Table 1 - Compounds Identified in Neutral Volatiles of Haddock Samples Held at Different Temperature Levels.

Fish in Rigor	Fish Stored for 8 Days at 0° C. (32° F.)	Fish Stored for 8 Days at 0° C. (32° F.) and 3 Months at -10° C. (14° F.)
	(Compounds)	
None	Acetaldehyde	-
"	Dimethyl sulfide	-
"	Methanol	Methanol
"	Ethanol	Ethanol
"	Trimethylamine	Trimethylamine
"	Trimethylamine oxide	Trimethylamine oxide

A more concentrated odor solution was obtained by straight distillation of the total condensable fraction. The cut coming over at a temperature of 90° C. (194° F.) appeared to have the highest concentration of odorous material. The residue remaining after distillation was odorless (8, 9).

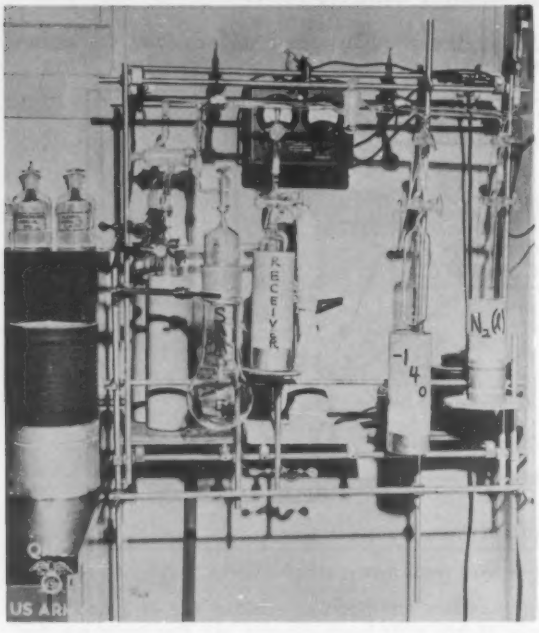

Fig. 5 - Apparatus for high-vacuum low-temperature fractionation of odor components.

Vapor phase chromatography was then investigated as a means of further fractionating the concentrated fish odor. Suitable conditions for separating unknown substances were sought using column substrates of Carbowax, Silicone, and Apiezon Grease on a firebrick support. Carbowax and Apiezon Grease gave poor resolution of the aqueous solution. Separation was achieved using Silicone as the substrate although considerable quantities of water were trapped along with the separated components. Using the Silicone column four components were detected and these components were collected by condensing the column eluate in traps cooled to -80° C. (-112° F.). Mass spectral analysis indicated that one fraction contained only CO_2, another fraction contained ethanol and methanol, a third fraction contained trimethylamine and water, and the fourth fraction contained trimethylamine, trimethylamine oxide, and water.

EXPERIMENT 3: The sample used in this experiment was 1,500 grams of haddock fillets which had been at ice temperature (0° C. or 32° F.) for 8 days, stored at -10° C. (14° F.) for three months and thawed at room temperature for 8 hours. Total condensables were collected; the fish odor was concentrated by distillation under reduced pressure; the concentrate was chromatographed on a Silicone column and fractions separating were collected and analyzed by mass spectrometry. The same compounds which were identified in Experiment 2 were also found in this sample. There were indications that this sample contained larger quantities of trimethylamine than the previous sample and that the residue remaining after distillation contained other compounds which contribute to the odor of fish. Methods for removing these remaining compounds from this residue are presently being investigated. The results obtained in this investigation to date are summarized in table 1.

DISCUSSION

The approach used in this study has so far been of a qualitative nature only. Considerable effort has been devoted to developing and testing methods in order that future work may be of a quantitative nature. The results to date indicate that "fish odor" is a complex mixture of organic compounds occurring in minute concentration in gross amounts of water. The results stated in this report are subject to change on the basis of additional evidence.

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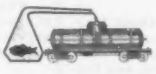
FURTHER RESULTS ON USE OF FISH OIL FOR ORE FLOTATION

The School of Mines and Metallurgy at the University of Minnesota, under a contract with the Bureau, has reported further very promising results in the use of fish oils for iron-ore flotation. In previous work using fish-oil fatty acids, it has been possible to reduce the silicate impurities in the ores from the 8 percent level left after magnetic concentration down to about 5 percent. Recent work employing chemical derivatives of fish-oil fatty acids has reduced this level to one percent. Such extreme concentration is not necessary for efficient commercial operation. When these laboratory experiments are tried in commercial-scale experiments, the level of impurities is likely to be somewhat higher.

The contractor also reports that high temperature iron-ore flotation, first proposed in our research program more than a year ago as a means of improving flotation efficiency, has been adopted by a commercial iron-ore flotation plant in Michigan.



SHARK REPELLENT

The Office of Naval Research recently awarded a research contract to the East Boston Fishery Technological Laboratory. This work, to be done in Boston, will include chemical studies on decomposing shark meat with the eventual aim of finding an effective shark repellent.

Shark meat will be decomposed under various conditions. The resulting product will be extracted, concentrated, and an attempt made to isolate and identify the active material. The biological testing of the effectiveness of the resulting products will be done by the Navy who will maintain close contact with Bureau technologists.

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Atomic Waste

ATOMIC WASTE DISPOSAL TO BE STUDIED BY DIVERS OFF NEW ENGLAND COAST: Skin-divers equipped with color cameras will watch at the sea bottom this summer as simulated packages of "radioactive waste" are dumped into 50 feet of water off the New England coast. The job will be done under an agreement with the Atomic Energy Commission by oceanographers of the Coast and Geodetic Survey, U. S. Department of Commerce.

Instead of real atomic waste materials, the packages will contain a dye that will be readily recognized in the water if a package leaks. The Atomic Energy Commission wants to know whether such containers remain intact, break open, gradually disintegrate, or are buried in the bottom. Perhaps they behave differently according to the nature of the sea floor.

The skin-divers will lower themselves from the fantail of the survey vessel Gilbert and station themselves at the bottom as the dye-containing packages are dropped from another part of the vessel. The containers will be numbered for identification. If the visibility is poor, the divers can locate them by dragging a wire that will catch on hooks in floats attached to them.

The diving operations will be carried on over Browns Ledge, which is about eleven miles west of Marthas Vineyard. The team of three survey divers may be accompanied by another scientist from the Fish and Wildlife Service.

The Browns Ledge studies are part of a larger project planned to find out what happens to radioactive waste dropped into the sea, so that the best disposal areas and methods can be determined.

Other data will be gathered in a disposal area about 20 miles off Boston harbor, where wastes of low radioactivity and obsolete ammunition have been dumped in the past. The depth is about 300 feet. No diving will be done here, and the equipment used will be tested with a counter for radioactivity whenever it is pulled aboard.

The direction and speed of the currents at three depths will be taken every half hour for 100 hours with meters lowered at two stations several miles apart. Every hour during the same period, a record of temperatures at all depths will be made with a bathythermograph.

Water temperatures will also be measured, as the survey starts and ends along a line from the Boston harbor entrance to a point beyond the disposal area.

Many samples of bottom sediment and seawater will be gathered by the Survey's personnel for analysis by the Public Health Service. Samples of plankton (minute animal and plant life) taken by the Coast and Geodetic Survey in nets will also be turned over to a biological laboratory, such as that of the Fish and Wildlife Service at Woods Hole.

At Browns Ledge it is planned to make similar current and temperature records and to obtain water, sediment, and plankton samples. Here the divers will try to "shave" the top half inch off the bottom to get samples of sediments.

Analysis of the water, bottom, and marine life from the disposal area is expected to show the extent of absorption of radioactivity. The current data will help to determine where the materials have been carried.

In some new area where dumping has started, it is planned to study possible absorption by "bottom dwellers" such as crabs and molluscs indigenous to the section. Many marine animals can concentrate trace elements and may prove to be good indicators of radioactive concentration when examined by bioradiologists of other Government or private agencies.

The Coast and Geodetic Survey made an exploratory survey on Georges Bank last summer to test the feasibility of observations and sample collections by diving oceanographers, and also of measuring deep currents from anchored buoys.

California

AERIAL CENSUS OF COMMERCIAL FISHING CONTINUED: Airplane Spotting Flight 59-1: The inshore area from Morro Bay (Point Estero) to the Mexican Border (Tijuana River) was surveyed from the air (February 9-10 and 13, 1959, by the California Department of Fish and Game Cessna 170 (1359D) to determine the distribution and abundance of pelagic fish schools and to observe general marine conditions and activity.

Weather conditions during the flight ranged from broken clouds and showers with good visibility to clear skies and almost unlimited visibility.

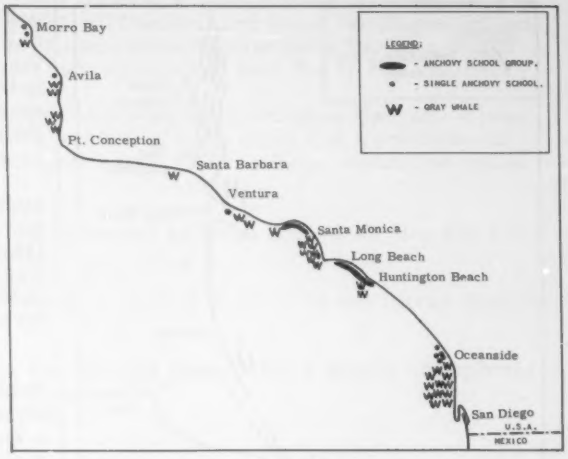
Few pelagic fish schools were observed in the northern and southern portions of the survey area, but from Point Dume to Newport Beach 471 schools of anchovies were seen. The heaviest concentration occurred between Los Angeles Harbor and

Huntington Beach where 309 schools were tallied.

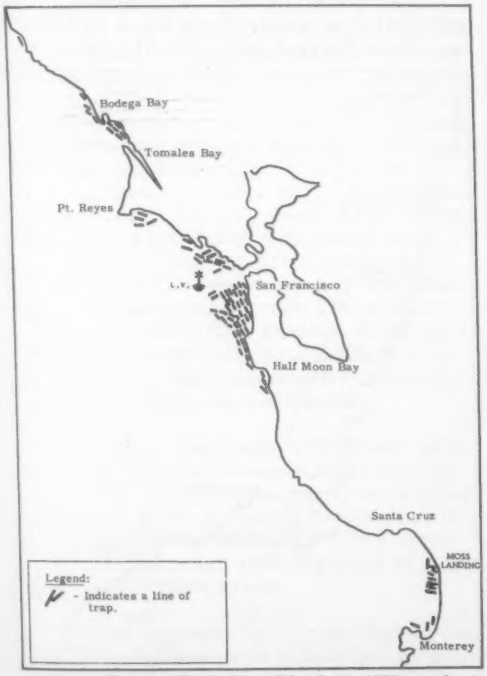
Another group consisting of 155 schools was present between Santa Monica and Malibu. These had the appearance of typical anchovy schools, but some encountered in the vicinity of Malibu behaved more like sardines. A positive distinction was not made.

A total of 34 grey whales was seen in the survey area and all but 2 were traveling in a southerly direction. They were all quite close to shore and two at Pismo Beach were just outside the surf line.

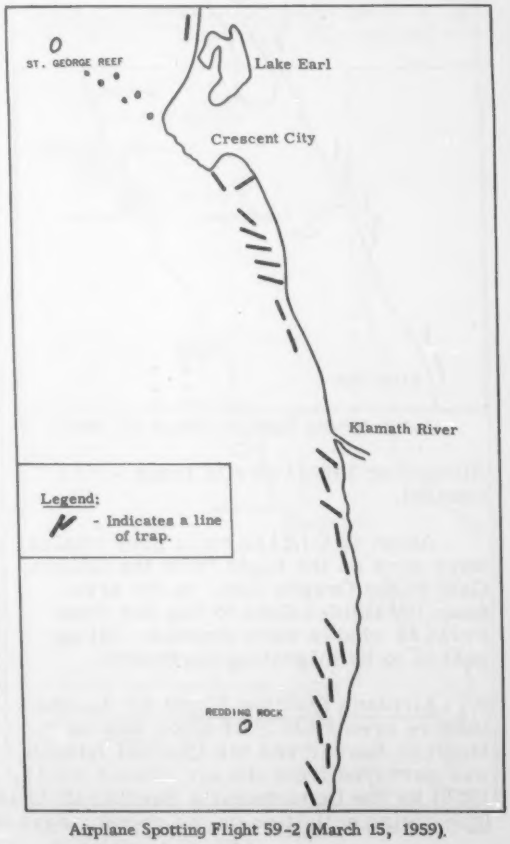
Large porpoise schools were observed between one and two miles offshore near Laguna Beach, Oceanside, and Del Mar.



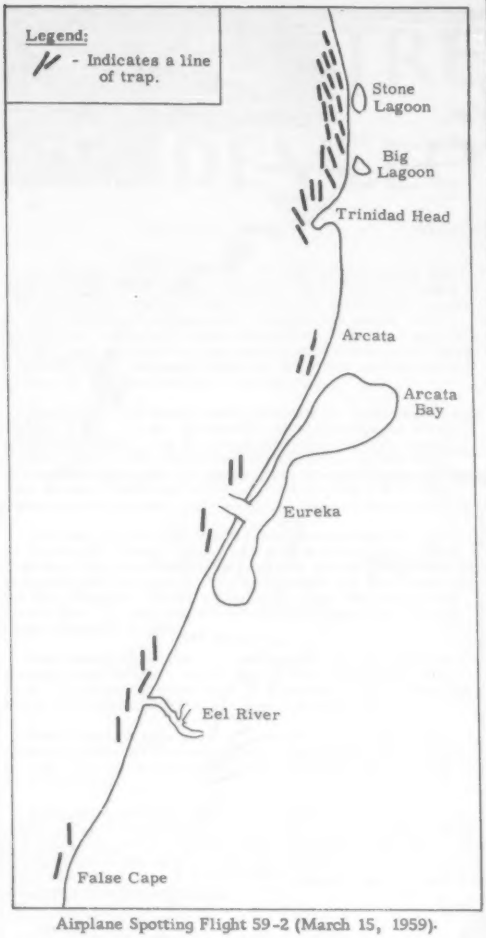
Airplane Spotting Flight 59-1 (February 9, 10, & 13, 1959).



Airplane Spotting Flight 59-2 (March 15, 1959, north of Golden Gate; March 16, 1959, south of Golden Gate).



Airplane Spotting Flight 59-2 (March 15, 1959).



Airplane Spotting Flight 59-2 (March 15, 1959).

Altogether 146 lines of traps were counted.

About 45 California grey whales were seen on the flight from the Golden Gate to the Oregon line. In the area from the Golden Gate to Big Sur State Park, 32 whales were counted. All appeared to be migrating northward.

Airplane Spotting Flight 59-3: The inshore area from Half Moon Bay to Mexican Border and the Channel Islands was surveyed from the air (March 16-17, 1959) by the Department's Beechcraft to locate specific areas of commercial abalone diving activities on the opening days of the abalone season.

Water in the inshore area was generally dirty. This condition probably was due to the rain storms during the week of the survey. Particularly dirty water was noted from Santa Barbara to Port Hueneme and near Santa Monica and Dana Point.

Airplane Spotting Flight 59-2: The coastal waters from Monterey to the Oregon line were surveyed from the air (March 15-16, 1959) by the Department's Cessna 180 to determine the crab fishing localities of northern and central California.

Excellent weather and sea conditions made the trips entirely successful. Areas where traps were found were covered in a zigzag pattern extending offshore to the maximum depth which could be fished. From the California-Oregon boundary to below Shelter Cove 63 lines of traps were counted while between the Russian River and Martins Beach there were 72 lines and from Moss Landing to Monterey 11.

Airplane Spotting Flight 59-3 (March 16-17, 1959).

Although storm warnings had just been taken down the evening of March 15, the ocean was reasonably calm. Five diving boats off Cambria and two at San Miguel Island were observed on March 16. On March 17 there were three at Santa Barbara Island and two at Ocean Beach. Most of the fleet had remained in port due to the weather.

Approximately 50 schools of fish were observed off Partington Canyon. These schools were all within a distance of 5 to 6 miles of each other and were close to shore. Many schools were seen off Vandenburgh Air Force Base, about five miles offshore.

A total of 43 California grey whales was noted between Half Moon Bay and Long Beach. All appeared to be moving north.

North of Cambria approximately 20 miles, a herd of 50 to 80 sea otters was observed in the kelp.

No fish schools were noted among the Channel Islands but a school of approximately 200 porpoises was seen off San Diego.

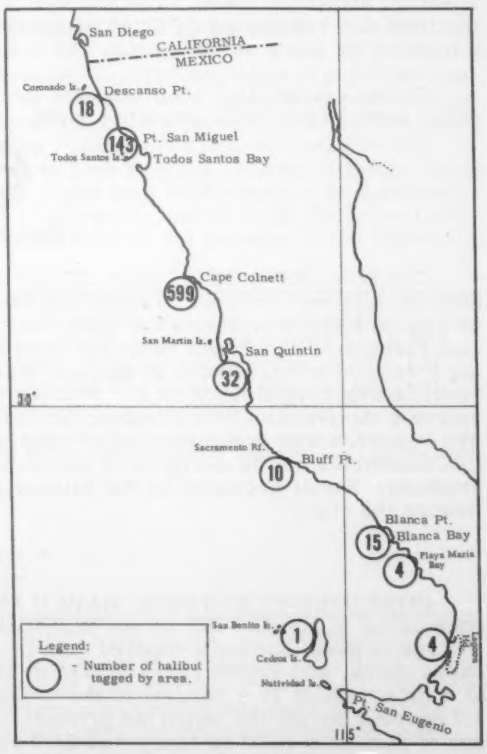
Note: See Commercial Fisheries Review, March 1959, p. 26.

* * * * *

CALIFORNIA HALIBUT STUDIED OFF BAJA CALIFORNIA COAST (M/V N. B. Scofield Cruise 59-S-1 and M/V Nautilus Cruise 59-N-1-Sportfish): The coastal waters from the United States border of Baja California to Cedros Island were surveyed to obtain specimens of the "California halibut" (Paralithythys californicus) for tagging purposes, morphometric studies, and length-weight-age studies. The work was done by California Department of Fish and Game vessels N. B. Scofield and Nautilus from January 4-22, 1959. Other objectives were (1) to determine what physical and oceanographic conditions prevail in the areas where halibut, their eggs, and young are found; (2) to obtain samples of other fish species found in association with halibut; and (3) to test the efficiency and practicality of trawling gear in Mexican waters.

A total of 139 hauls with trawl nets produced 826 California halibut for tagging. Cape Colnett proved to be the most productive area, although heavy seaweed growth at San Quintin and other places prevented thorough investigation of formerly productive areas.

It was interesting to note that in two localities there was practically no variation in water temperature between the bottom and the surface. In 54 feet of water at Colnett Bay, the bottom was only 0.5° F. colder than the surface. In Todos Santos Bay a variation of 0.3° F. was noted in water 44 feet deep. The bottom waters at these localities were 58° F.



M/V N. B. Scofield and M/V Nautilus Cruise 59-S-1 and 59-N-1 (Jan. 4-22, 1959).

The most successful fishing was found in water ranging from 66 to 84 feet in depth. Fifty percent of the captured halibut were 13 to 17 inches long and 9 percent equaled or exceeded the California length requirement of 22 inches.

A total of 557 cartilaginous fish was taken--representing 21 species in 13 families and 17 genera. The greatest number were bat rays (151), shovelnose guitar fish (87), and round stingrays (74). The 56 species of bony fish were from 30 families and 48 genera. There were 1,840 of these and California halibut (842) were most numerous, followed by diamond turbots (287), and fan-tail soles (80).

Several bony and cartilaginous fish collected were rare, others established extensions of range and depth records, and one smoothhound shark established a new maximum size record. Several institutions and individuals were presented with specimens in which they were particularly interested.

* * * * *

PRELIMINARY SAMPLING OF FISH POPULATION IN SAN FRANCISCO BAY (M/V Nautilus Cruise 59-N-2-Special Projects): Preliminary fish population sampling in the polluted waters of South San Francisco Bay immediately north and south of Dumbarton Bridge, was conducted by the California Department of Fish and Game's research vessel M/V Nautilus on February 26-27, 1959.

Experimental trawling was conducted with an eight-foot beam trawl made of one-inch stretched mesh. The net was towed on the bottom for about six hauls on the first day resulting in a catch of several hundred each of spider crab and shrimp, a hundred or more shiner perch, and 1-3 specimens of several other varieties.

On the second day, about six mid-depth hauls were made with an eight-foot beam trawl made of two-inch stretched mesh. Only four shiner perch were caught.

Canned Fish

CONSUMERS' MOTIVATION STUDY INITIATED: a motivational study of household consumers' attitudes towards the use of canned tuna, salmon, sardines, and other canned fishery products has been contracted out by the U. S. Bureau of Commercial Fisheries. A private research firm located in Philadelphia, Pa., is interviewing a sample of households in Boston, Mass., Detroit, Mich., Birmingham, Ala., and rural Orangeburg County, S. C. Trained interviewers will probe-in-depth the homemaker's motivations, preferences, attitudes, and use of canned fishery products. The research was undertaken after consultation with representatives of the canned fish industries and is designed to enable the industry to more effectively market its products. Funds provided by the Saltonstall-Kennedy Act of 1954 are being used to finance the study.

* * * * *

CONSUMER PURCHASES, MARCH 1959: Canned tuna purchases by household consumers in March 1959 were 879,000 cases of which 46,000 cases were imported. By type of pack, domestic-packed tuna purchases were 187,000 cases solid, 554,000 cases chunk, and 92,000 cases grated or flakes. The average purchase was 1.8 cans at a time. About 29.9 percent of the households bought all types of canned tuna; only 1.7 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 35.0 cents and for a $6\frac{1}{2}$-oz. can of chunk 28.1 cents. Imported solid or fancy was bought at 30.3 cents a can. March purchases

were lower than the 1,125,000 cases bought in February by 21.9 percent; retail prices were slightly higher.

During March household consumer purchases of California sardines were 46,000 cases, and 34,000 cases imported. The average purchase was 1.6 cans at a time for California sardines, and 1.8 cans for imported. Only 1.9 percent of the households bought canned California sardines and 2.2 percent imported. The average retail price paid for a one-pound can of California sardines was 23.4 cents, and for a 4-oz. can of imported 26.1 cents. Retail prices were lower for California sardines but higher for imported. Because of the liberal stocks of canned California sardines, there has been a steady increase in purchases since October 1958.

Canned salmon purchases in March 1959 were 249,000 standard cases, of which 132,000 cases were pinks and 57,000 cases reds. The average purchase was 1.2 cans at a time. About 17.2 percent of the households bought all types of canned salmon; 8.7 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 55.8 cents and for red 84.4 cents. March purchases were down about 23.4 percent from the 325,000 cases bought in February and retail prices generally higher.

Cans--Shipments for Fishery Products in 1958 by Area

Out of total shipments of 123,602 tons of steel for use in the manufacture of cans for packing fishery products in 1958, the Pacific area (including Hawaii) used 89,306 tons or 72.2 percent. The Pacific area was followed by the Eastern area (includes New England, Middle Atlantic, South Atlantic, and Puerto Rico) with 29,958 tons or 24.2 percent. The balance of the country or Central area (includes Gulf States) used only 4,338 tons or 3.6 percent of the 1958 total.

Shipments of steel for the manufacture of cans for fishery products on a quarterly basis were heaviest during the third quarter for all the geographic areas. In the East 39.4 percent or 11,807 tons out of a total of 29,958 tons were consumed in the third quarter of 1958. The Central section used 1,333 tons (30.7 percent of the 4,338-ton annual total) and the Western area 33,932 tons (38.0 percent of the annual total of 89,306 tons) during the third quarter.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor 23.0 base boxes of steel equal one short ton of steel.

Clams

HARD CLAMS RAISED UNDER LABORATORY CONTROL SHIPPED FOR TEST PLANTING: Early in April 1959 close to 150,000 hard clams, Venus (Mercenaria) mercenaria were shipped to France and England for test plantings. The hard clams were produced in the tanks of the U. S. Bureau of Commercial Fisheries Laboratory at Milford, Conn., as part of a continuing program to develop methods of rearing clams and oysters under laboratory-controlled conditions for commercial operations.

One commercial hatchery has already been set up on the eastern shore of Virginia and another is in the planning stage for the Long Island, N. Y., area. Some shellfish biologists predict that within 20 years a substantial part of the commercial clam catch will be derived from seed clams reared under laboratory-controlled conditions.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MARCH 1959: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.0 million pounds (value $1.2 million) of fresh and frozen fishery products were purchased in March 1959 by the Military Subsistence Market Centers. This exceeded the quantity purchased in February by 40.8 percent and was 19.1 percent above the amount purchased in March 1958. The value of the purchases in March 1959 was higher by 51.7 percent as compared with February and 17.0 percent above March 1958.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, March 1959 with Comparisons

QUANTITY				VALUE			
March		Jan.-Mar.		March		Jan.-Mar.	
1959	1958	1959	1958	1959	1958	1959	1958
(1,000 Lbs.)				($1,000)			
2,023	1,698	4,949	5,024	1,179	1,008	2,800	2,952

1/ Not available

During the first three months of 1959 purchases totaled 4.9 million pounds--a decrease of 1.5 percent in quantity and 5.1 percent in value as compared with the first three months of 1958.

Prices paid for fresh and frozen fishery products by the Department of Defense in March 1959 averaged 58.3 cents a pound, about 4.7 cents more than the 53.6 cents paid in February, but 1.1 cents less than the 59.4 cents paid during March 1958.

Canned Fishery Products: Tuna and sardines were the only canned fishery products purchased for the use of the Armed Forces during March 1959. For the first three months of 1959 purchases of canned tuna were up by 111.0 percent and canned sardines were up tenfold from the first three months of 1958. No canned salmon was purchased during January-March 1959, but close to 1.2 million pounds were purchased in the same period of 1958.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, March 1959 with Comparisons

Species	QUANTITY				VALUE			
	March		Jan.-Mar.		March		Jan.-Mar.	
	1959	1958	1959	1958	1959	1958	1959	1958
	(1,000 Lbs.)				($1,000)			
Tuna	116	96	869	412	58	54	387	218
Salmon	-	546	-	1,241	-	295	-	673
Sardines	228	3	265	24	27	1	40	8

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated, because it is not possible to obtain local purchases.

Correction for tables 1 and 2 on p. 35 of the December 1958 issue of this Review: first two columns of both tables should have been headed "September" instead of "June."

Fur Seals

NEAR-RECORD PRICES FOR ALASKA FUR-SEAL SKINS AT SPRING AUCTION: At the semi-annual sale of Alaska fur-seal skins held in St. Louis on April 10, 1959, a total of 24,578 United States-owned fur-seal pelts were sold for $2,450,000 for the account of the United States Government. The skins are products of the sealing operations of the U. S. Bureau of Commercial Fisheries on the Pribilof Islands.

An Alaska fur seal family.

The annual production of the Pribilof Islands, which in recent years has varied from 65,000 to 120,000 skins, is divided, under treaty, 70 percent to the United States and 15 percent each to Canada and Japan. The United States and Japanese skins, plus lesser quantities of South African and South American skins, all processed and ready for use in garment manufacturing, are disposed of at sales each spring and fall. Of the total amount received for United States skins on April 10, $1,630,000 will be deposited in the United States Treasury as the Government's share; the rest represents the share of the St. Louis company, handling and processing the skins for the Government.

The prices received at the April 10 sale averaged $99.75 per skin. This price seldom has been exceeded previously; on October 5, 1956, the skins sold for an average of $100.96. This year's average represented an increase of 10.1 percent over the price obtained at the last previous sale (October 17, 1958).

The increase in price was considered modest in view of the increased business confidence evident at the sale. The attendance included the largest number of buyers at any sale of fur-seal skins ever held at St. Louis. Also in evidence was the greatest interest in fur-seal products ever shown by foreign buyers; included among the accounts represented at the sale were firms from Canada, West Germany, Denmark, Sweden, Switzerland, France, and Italy.

The auction's average prices by types were: dark-brown or matara $87.87 per skin, black $120.97, and dark shade kitovi $95.51. Japanese Government Alaska fur-seal skins sold: black $117.59, matara $91.09, total average $99.53. All South Africa fur-seal skins averaged $39.76. Uruguay skins averaged $49.46.

The sales of all fur-seal skins at this spring auction yielded $3,519,168.

Note: Also see Commercial Fisheries Review, January 1959 p. 30.

Great Lakes

SEA LAMPREY CONTROL PROGRAM EXTENDED: The extension of the chemical treatment program for control of the sea lamprey to Lakes Michigan and Huron in the United States fiscal year beginning July 1, 1960, was agreed upon at a meeting of the Great Lakes Fishery Commission at Ottawa, Canada, April 16 and 17,

1959. The program for Lake Superior is scheduled to be largely completed by the end of fiscal year 1960 (June 30).

The program in Lake Superior has just been advanced by the purchase of 25,000 pounds of the lamprey-control chemical. Also, treatment was carried out successfully this month on the Brule River in Wisconsin, a tributary to Lake Superior which is famous for its rainbow trout fishing. Biologists report that the treatment was successful, with the complete kill of lamprey larvae and no damage to game fish.

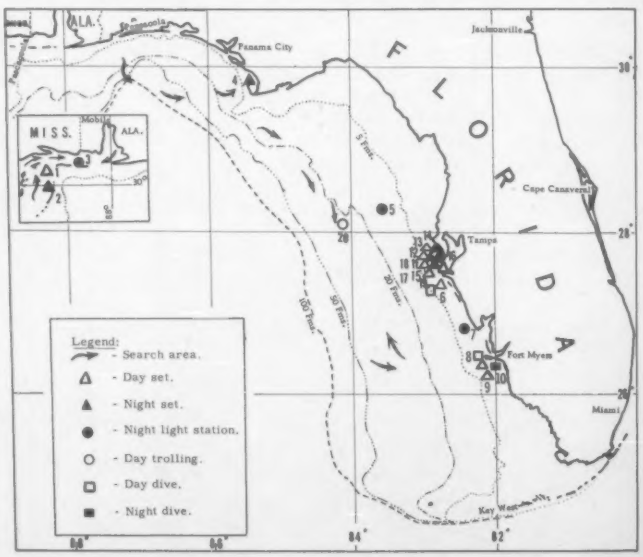
Great Lakes Exploratory Fishing and Gear Research Program

PROGRAM FOR LAKE ERIE STARTED YEAR'S OPERATION APRIL 15: The chartered M/V Active, a 50-foot Diesel-powered trap-net vessel of the Lake Erie Fisheries Exploration and Gear Research program of the U. S. Bureau of Commercial Fisheries, left Sandusky, Ohio, April 15 on the first of a series of two-week cruises scheduled for the period ending November 30. The vessel has been outfitted to carry on the experimental smelt fishing which was initiated in September 1958. Current program objectives are to determine the commercial availability of smelt, alewives, and other underutilized species; and to determine the feasibility of capture of these species by seines and other types of gear not presently used by United States fishermen in Lake Erie. Port calls during the year are planned for Sandusky, Lorain, and Ashtabula, Ohio; and Erie, Pa.; and other Lake Erie ports.

Gulf Exploratory Fishery Program

SARDINE-LIKE FISH STUDIED AND LAMPARA NET TESTED IN NORTHEASTERN GULF OF MEXICO (M/V George M. Bowers Cruise 17): An 18-day cruise in the northeastern Gulf of Mexico for the purpose of testing an experimental lampara net and to obtain data on the seasonal occurrence of surface schools of sardine-like fish was completed by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers on April 10, 1959. The Mississippi Sound, Cape San Blas, St. Petersburg, and Sanibel Island areas were surveyed during the cruise.

A total of 13 sets was made, 2 of which were blind sets for the purpose of studying the behavior of the gear in certain tidal and wind conditions. Underwater



M/V George M. Bowers Cruise No. 17 (March 24 to April 10, 1959).

observations were made of the operation by SCUBA divers, and aerial observations were made through the cooperation of a Florida seafood company.

Several minor modifications were indicated by the lampara net studies. The 213-fathom net was sufficiently large to encircle most of the schools, however, thread herring, the principal species encountered, showed little hesitation in charging through the 4-inch stretched-mesh wings when lack of strain allowed the meshes to open.

Nighttime attraction of thread herring and pilchards (Harengula) was tested using a 500-watt floodlight placed three feet above the surface, a 100-watt submarine lamp placed six feet below the surface, and a 12-volt sealedbeam lamp 6 feet below surface. Observation of fish aggregations were made by SCUBA divers and on depth recorders. The largest and most compact concentrations were obtained with the 500-watt above-surface floodlight.

Adverse weather conditions restricted actual fishing operations to five days.

Hawaii

COMMERCIAL FISHERIES LANDINGS, 1958: The commercial fisheries landings of sea and pond fish and shellfish in the Hawaiian Islands during the calendar year 1958 amounted to 11.4 million pounds, valued at about $2.6 million ex-vessel, according to a statistical summary by the Hawaiian Division of Fish and Game. As compared with the preceding calendar year, the catch increased 650,000 pounds or 6.1 percent in volume and $34,000 or 1.3 percent in value. The increases in weight and value were due primarily to higher landings of skipjack tuna (aku) which was up 705,000 pounds or 11.5 percent in weight and $105,275 or 13.3 percent in value. The increase in the landings of skipjack tuna more than compensated for the lower landings of big-eyed tuna and mackerel.

Ex-vessel prices paid for fish and shellfish continued at a high level,

Table 1 - Hawaiian Commercial Fishery Landings and Ex-Vessel Values, 1958

Species		1958		1957	
English Name	Hawaiian Name	Quantity	Value	Quantity	Value
		1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Ocean Catch:					
Amberjack	Kahala	89	23	70	19
Big-eyed scad	Akule	179	123	177	128
Dolphin	Mahimahi	149	58	210	72
Goatfish	Weke-ula Weke Moana Kumu	141	82	131	83
Crevalles	Ulua Omilu	98	39	112	48
Mackerel	Opilu	188	79	216	82
Snappers:					
Gray	Uku	74	31	101	40
Pink	Opakapaka Kalekale	141	67	148	67
Red	Ulaulu koae Ulaulu (ehu)	89	68	94	68
Swordfishes, sailfishes, spearfishes, & marlins	A'u & A'u lepe	725	164	598	163
Tuna & tunalike fish:					
Albacore	Ahipalaha	16	4	10	3
Big-eyed & bluefin	Ahi	1,596	622	1,633	620
Yellowfin	Ahi	408	117	383	111
Skipjack	Aku	6,835	899	6,130	794
Bonito	Kawakawa	42	7	89	14
Shellfish:					
Crabs	Kona, kauakonu	8	3	16	8
Limpet	Ophi	10	4	17	6
Lobster, spiny	Ula	9	6	14	9
Octopus	Hee	7	4	9	5
Shrimp	Opae	1	1	2	3
Squid	Muhee	25	6	10	5
Other fish & shellfish	-	436	162	446	187
Total Ocean Catch		11,266	2,569	10,616	2,535
Pond Catch:					
Clams	Olepe	4	1	9	3
Crabs	Kuakonu, Papai	2	1	2	1
Milkfish	Awa	16	8	24	11
Mullet	Amaama	57	47	60	49
Tilapia	-	5	1	-	-
Other species	-	11	5	16	6
Total Pond Catch		95	63	111	70
GRAND TOTAL		11,361	2,632	10,727	2,605

1/ Includes only marlins (black, silver, striped) and swordfish.

except for skipjack tuna which is usually processed into canned tuna and has to compete with mainland United States production. The price paid for skipjack averaged about $263 a short ton.

The Hawaiian landings in 1958 as in past years were relatively heavy from June through August--40.2 percent of the total was landed in that period. The value of the landings for this three-month period was, however, only 32.9 percent of the total annual value. The month of March was the month of lightest landings with only 3.7 percent of the 1958 total, but the value for this month was about 6.2 percent of the total.

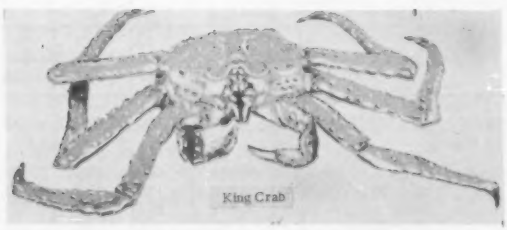
The landings in 1958 at the Island of Oahu made up 75.2 percent of the total quantity and 75.5 percent of the total value. The Island of Hawaii accounted for 14.6 percent of the quantity landed and 15.2 percent of the value and the balance of about 9 percent was divided between four other islands of the group.

* * * * *

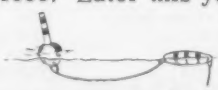
SKIPJACK TUNA LANDINGS LOW, JANUARY-MARCH 1959: Skipjack tuna landings in Hawaii during January-March 1959 were low. Comparable partial landings for 1957 and 1958 show the 1959 landings were only 36.6 percent of the 1958 landings. Most of this decline resulted from lower January landings. This should not be taken to indicate either a poor season or a good one in the fishery because the winter catch and that of the subsequent season have no apparent relation.

Only about 5 out of 18 sampans of the Honolulu fleet are fishing. Some industry members attribute this to a lack of fishermen. This lack, however, may be traced to the low total landings of skipjack during the past two years. Many fishermen, especially the younger ones, have left the boats to find employment ashore.

King Crab


King Crab

TAGGING IN BRISTOL BAY, ALASKA: The United States and Japan have been tagging king crabs in Bristol Bay, Alaska, and in the Aleutian Islands to determine if regulations should be set up to protect them. In the last five years biologists of the U. S. Bureau of Commercial Fisheries, Seattle, Wash., tagged about 30,000 large crabs to determine their movements and growth rates. Using SCUBA gear, they captured and measured 1,350 small king crabs at Unalaska and conducted molting observations on 150 other small crabs in March 1959. Later this year they will study growth rates.



Maine Sardines

CANNED SARDINES INCLUDED ON MILITARY MASTER MENU: Canned Maine sardines will be included as an optional item on the over-all United States Military Master Menu, effective January 1, 1960. Assurance of this action was given the Maine Sardine Council on April 24, 1959, by the Chief of the U. S. Army Subsistence Market Center in Chicago. Final approval was given after testing and consideration of the product by the Military Master Menu Board.

The action will mean that canned sardines will be listed as a menu item for certain meals at all Air Force and Army installations, but that final usage will be a decision of the individual commanding officers.

Under Federal laws the Armed Forces must purchase domestically-manufactured items when available and this coupled with the menu listing should add considerably to the procurement volume for Maine sardines, the Maine Sardine Council's Executive Secretary stated.

The Council has been working on this project for several years and the Maine sardine industry's big progress in quality control, package development, and other factors contributed much to the decision.

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SOURCE OF HIGH QUALITY PROTEIN: The findings of extensive investigations on the nutritive value of canned Maine sardines were discussed by the Head of the Department of Food Technology at the Massachusetts Institute of Technology, in an address at the Annual Research Meeting of the Maine Sardine Industry on April 10, 1959, in Bangor, Maine. The results brought home some very interesting and significant facts about Maine sardines.

One of the most important factors that was brought out in the address was that Maine sardines contain about 25 percent protein, and this is not just ordinary protein, but high-quality protein with a good pattern of amino acids (the building blocks which make up proteins) of the type that are found in eggs, meat, and milk.

In comparison with bread, Maine sardines contain appreciably higher quantities of that important amino acid, lysine. Thus, Maine sardines not only provide a delicious sandwich filler, but also enhance the nutritive value of bread by contributing the essential protein nutrients which are not present in bread to the same extent as in Maine sardines. It was indicated that from the standpoint of lunches, bread and sardines are a good, logical combination, combining the best features of both foods.

Some of the work done with feeding laboratory animals Maine sardines as the source of protein and fat of the diet was also discussed. These studies were of significance in that they showed that Maine sardines favored good muscle building and reduced the tendency towards a production of fat in the animals.

He also pointed out to the Maine industry the value of the Maine Sardine Research and Quality Control Program in producing better, more acceptable Maine sardines which can mean so much to producing better nutrition for more people.

Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SUMMER 1959: United States civilian per capita consumption of fresh and processed fish and shellfish through early summer will likely be about the same as a year earlier. Average retail prices in the next several months probably will average a little below the high levels of the same part of 1958.

Supplies of commercially-caught fishery products are now increasing seasonally. The relatively high level of prices together with improved weather are expected to encourage intensive fishing operations.

There are substantially larger stocks of processed fishery products on hand this spring than last. Cold-storage holdings of the frozen items this April 1 were up by more than a fourth from the year-earlier level. Stocks of canned tuna and California sardines are much heavier this spring.

Imports of fishery products this spring and early summer may be a little heavier than a year earlier because of the relatively high level of prices in the United States. Exports may be no higher than in the same part of 1958 unless foreign outlets can be developed for canned California sardines (pilchards).

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's May 4, 1959, release of The National Food Situation (NFS-88).

Menhaden

RESEARCH ON PARASITES MAY REVEAL MIGRATORY ROUTES: If young menhaden pick up parasites in the rivers and estuaries and retain them after the winter migration to the ocean, it may be possible to locate the home river or estuary for fish caught anywhere the following year, a Virginia fishery biologist stated on April 3, 1959. Tags are often applied to fish when scientists want to learn about their migrations or where they hatched and grew up. Virginia fishery biologists believe that parasites can be used as natural tags.

It is possible that young menhaden growing up in the Delaware Bay or in Albemarle Sound, N. C., or some other section, will carry different parasites, or may differ in degree of infestation with the same parasite from those growing up in Chesapeake Bay, the Virginia biologist stated. The biologists hope that it will be possible to locate the home waters for fish taken in the commercial catches by examining the external parasites living on the fish. Of particular interest are the monogenetic trematodes (small parasitic worms), but it is possible that the biologists will have to resort to copepods, isopods, leaches, and other parasites to give the needed information. If these fail, the parasites of the digestive tract may furnish the clues needed to unravel the migratory patterns of the menhaden.

Samples of young fish collected at two-week intervals from estuaries along the Atlantic Coast from Massachusetts to Florida will be sent to the Virginia Fisheries Laboratory. By examination of the samples taken in this manner, the biologists hope to learn at what time the fish pick up parasites, and what types and numbers of parasites are present on fish caught from various bays. The U. S. Bureau of Commercial Fisheries is cooperating closely with the Virginia Fisheries Laboratory in the study, and is supplying most of the young fish.

Research on the life history of menhaden at the Virginia Laboratory will be useful in managing this fishery to keep catches at a high level. More menhaden are caught by commercial fishermen than any other fish on the Atlantic Coast. Next to oysters and crabs they are the most valuable sea products landed in Virginia. Knowledge of the habits and behavior of the menhaden will be useful to fishermen and plant operators alike.

National Fisheries Institute Convention

CERTAIN RESOLUTIONS ADOPTED AT 1959 ANNUAL CONVENTION: A total of 16 resolutions was presented and adopted unanimously by those attending the 14th Annual Convention of the National Fisheries Institute (N.F.I.) in New York City, April 10-15, 1959. Those of more general interest follow:

That N.F.I. oppose the principle of dumping waste materials in rivers, bays, estuaries, and contiguous ocean waters, but that if such dumping is deemed essential by constituted State or Federal authority, then the effects of such dumping be determined in advance by the Fish and Wildlife Service or controlling State wildlife and fisheries officials, and the locations and manner of dumping be explicitly set forth by these authorities. Further, that this resolution be forwarded to the U. S. Fish and Wildlife Service.

That N.F.I. instruct its Director of Traffic to work towards the preservation and continuation of express-type service at a level of rates which will permit and encourage the movement of small-quantity-shipments of perishable seafood products throughout the United States.

That N.F.I. instruct its Director of Traffic to reaffirm during the 86th Congress the National Fisheries Institute's previously explained position in support of the fishery exemption.

That N.F.I. support legislation designed to make unlawful the compulsory payment of fees for the unloading of fishery products from motor vehicles.

That N.F.I. instruct its Director of Traffic to oppose the suggested repeal of the fishery exemption, and support in principle the extension of the fishery exemption to rail carriers, subject however to the adoption of guarantees and conditions which will protect the fishery industry in using motor carriers which provide existing vital services.

That the N.F.I. express to the Secretary of Interior and to appropriate officials of the U. S. Fish and Wildlife Service and the Bureau of Commercial Fisheries the industry's appreciation for and approval of the Bureau's program to develop voluntary grade standards for fishery products, noting with satisfaction the publication during the past year of grade standards for two additional products, haddock fillets and halibut steaks, and requesting that the development of grade standards for cod fillets, ocean perch fillets, Pacific ocean perch, salmon steaks, swordfish steaks, and sole fillets proceed as rapidly as practical.

That N.F.I. approve continuation of the standard industry practice of making adequate glaze allowances, and further, recommend that when the glaze on frozen fish is to be checked that the industry use the method proposed by industry members in Southern California, in which method the product is quickly washed with water so as to remove the glaze but not to thaw the flesh, the deglazed product is weighed and correction of 3 percent is added to compensate for losses of fish fluids, and an allowance of 2 percent is provided for individual variability.

That N.F.I. strongly protest against the unfair and arbitrary interpretation by the Secretary of Labor of the exemptions provided by Section 13(a)(5) and 13(b)(4) of the Fair Labor Standards Act, as amended, and urgently insist that it be given an opportunity to present its position before the Secretary of Labor prior to any enforcement thereunder, and that meanwhile this interpretative ruling be withdrawn pending further consideration by the Department of Labor and action by Congress in pending legislation.

* * * * *

INCREASED SALES AND CONSUMPTION IS THE ONLY ANSWER TO PROBLEMS FACING THE FISHING INDUSTRY: Increased sales and consumption of fish and shellfish products is the only answer to the complexity of problems facing the United States fishing industry today, according to Arnie J. Suomela, Commissioner, U. S. Fish and Wildlife Service. Suomela, who called the National Fisheries Institute 14th Annual Convention in New York City, April 10-15, 1959, "the sounding board in attacking the industry's problems," said fishermen, vessel owners, processors, and wholesalers are plagued by soaring production costs in day-to-day operations.

Costs of vessel replacement and construction, gear, and fuel make it imperative that fishermen and fleet operators find more effective and economic methods of catching and landing the fish, he said. At the same time, processors and wholesalers too must reduce costs of handling the industry's products.

"Unlike other industries you have no consumer problem," Suomela told the Institute, "only to convince him to buy more of your high-quality products."

With the annual per capita consumption of fish and shellfish at 10 pounds as opposed to 160 pounds of meat, Suomela pointed out that, "if we can sell just one more pound per capita" it will be enormously rewarding to the entire industry.

* * * * *

PACKAGING AND QUALITY CONTROL STRESSED ON FOOD STORE DAY: A number of chain-store operators urged that the fishing industry improve its packaging, exercise quality control on its self-service items, and develop new merchandising techniques. They spoke to the National Fisheries Institute during its 14th Annual Convention at New York City on Food Store Day on April 13. They further suggested that the fishing industry ship in smaller units and use promotional aids to attract the eye of the consumer.

"The package that you as processors pack, and we as retailers sell, is our ambassador to Mrs. Consumer," a Chicago chain-store operator pointed out. Speaking on packaging and labeling, he told members of the fishing and allied industries to consider what size package will best

satisfy the American housewife--whether it should be for two people, for the average family, or a large economy size. He told his audience to consider Mrs. Consumer's refrigerator or freezer in designing new packages. He also spoke of the need of establishing quality standards for the product inside the package, and adhering to them.

The president of a large chain store in Philadelphia told the Institute that their future progress hinged on further refinements in packaged frozen merchandise rather than the high handling costs of their fresh products. "With supermarket selling now so impersonal," he said, "any success in distributing a product is heavily dependent on a high uniformity of quality. The customer who buys a satisfactory product today, wants to find it exactly the same when she buys it a week or a month hence." He also pointed out that two-thirds of all the food sold at retail in the United States is in self-service markets and predicted that it will reach "90 percent of the total."

Congratulating the group on the enormous strides in fish packaging and processing during the past ten years, he added that one-third of all the things sold today were not on the shelf ten years ago, and another one-third have been sharply improved in quality and dressed up in new and better packages.

* * * * *

NEED FOR BETTER QUALITY STRESSED: The great need for increased quality standards in the fishing industry was stressed on Food Store Day by representatives of five of the nation's largest chain stores on April 13. Addressing the general session of the 14th Annual Convention of the National Fisheries Institute at New York City was a panel of speakers--Joseph Mueller, National Tea; Sidney Beck, Food Fair Stores; Lloyd Johnson, Super Valu; E. J. Voigt, Loblaw; and Louis Voron, Grand Union. The moderator was W. Jackson Catt, prominent in Buffalo's fishing business.

"Quality must be consistently tops," said Voigt, whose subject was "Private Labels." But he said, "before we can talk quality, let's get quality standards throughout the industry."

He also pointed out that private-label products should be retailed sufficiently below the national brands to effect a saving for the consumer. Too, the private label should show a greater profit structure to the retailer. But, he asked, "how can this be done with every seafood packer sharpshooting to cut the other's throat?"

Johnson of Super Valu also urged that more fishery products be brought under quality standards, although "a good deal of progress in quality improvement has been brought about by new and improved methods of handling from the fishing beds to the processing plants."

Emphasizing his subject "Quality," Johnson said, "The quantities in which frozen and prepackaged fish and seafoods are purchased and the nature of the processed product make it practically impossible to make anything other than rather superficial spot checks on quality. We must rely on the character and established reputation of our suppliers."

Speaking on packaging and labeling, Mueller of National Tea told the fishing industry, "The package that you as processors pack and we as retailers sell is our ambassador to Mrs. Consumer."

He told his audience to decide what the best size of package should be--for two people, for the average family, or large economy size. And he said also to consider Mrs. Consumer's refrigerator and freezer. Further, he said, look at the retailer's needs. Package must be of good design and display; construction should be that package will not look shopworn as it is handled, and should be tightly sealed.

Speaking on merchandising, Beck of Food Fair, reminded his audience that the average shopper spends only 20 to 25 minutes in a supermarket; yet she wants to shop the store to get ideas for meals. Trained personnel, he said, can prepare the merchandise to the customer's satisfaction. And, he added, "regardless of service or self-service, display for eye appeal, attractiveness, appetite-stimulation, and color are absolutely necessary."

"For quality control," Voron of Grand Union Stores said, "you might ship fresh fishery products in smaller units. A 50-pound box could come into our warehouse and out to the stores without touching it, except to ice as needed, thereby arriving in better condition."

Fig. 1 - Food Store Day panel of speakers at the April 13 session of the 14th Annual Convention of the National Fisheries Institute. Left to right: seated--Sidney Beck, Food Fair Stores; Lloyd M. Johnson, Super Valu Stores; E. J. Voight, Loblaw, Inc.; Louis Voron, Grand Union Market; J. H. Mueller, National Tea. Standing are fishery dealers Art Frohman, Chicago; W. Jackson Catt, Buffalo (chairman of meeting); and Lewis Goldstein, Philadelphia.

North Atlantic Fisheries Investigations

YELLOWTAIL FLOUNDERS TAGGED ON FISHING GROUNDS SOUTH AND WEST OF MARTHA'S VINEYARD AND OFF NAUSET LIGHT (M/V Delaware Cruise 59-3): A total of 72 1-hour tows were made by the U. S. Bureau of Commercial Fisheries research vessel Delaware from March 18-26, 1959, with a No. 36 otter trawl in 20-30 fathoms for the purpose of catching yellowtail flounder for tagging and for length and age distribution samples. Yellowtails were tagged to further define stocks, migrations, and for the estimation of fishing mortality. Sets were made on the commercial fishing fleet grounds from south of Martha's Vineyard to south of Block Island and off Nauset Light.

The Bureau's research vessel Delaware.

On the fishing grounds south of Martha's Vineyard to south of Block Island 2,100 fish were tagged. On the fishing grounds off Nauset Light 1,000 fish were tagged. Scale samples were collected to determine the age distribution of the tagged fish. Hydrographic data was collected throughout the area of the cruise.

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HADDOCK TAGGING AND VERTICAL DISTRIBUTION STUDIES (M/V Delaware Cruise 59-4): The tagging and release of large numbers of haddock on Georges, Browns, and Massachusetts inshore banks was the principal objective of the April 2-17, 1959, cruise of the U. S. Bureau of Commercial Fisheries research and exploratory fishing vessel Delaware. The secondary objective was to test the use of underwater television as a monitoring device used in conjunction with a mid-water trawl to study the vertical distribution of haddock.

About 1,100 haddock were tagged on Eastern Georges Bank, half of which were released on Georges and half transported to Browns Bank for release. Another 1,100 were tagged on Browns, half released there and half returned to Eastern Georges for release. Scales were taken from all fish for growth study purposes. Approximately 600 haddock were tagged at "the Corner" on the eastern side of the South Channel. Half of these were kept in tanks aboard the vessel for the duration of the tagging operation before being liberated and half were released immediately. Another 200 haddock were tagged at Jeffries Ledge. The fish were taken in 40-45 fathoms on all grounds with a standard No. 41 trawl towed at low speed (180 r.p.m. or about $2\frac{1}{2}$ knots). Tags used were the plastic tubing ("spaghetti") type, inserted into the dorsal musculature.

Approximately 900 haddock of the 1958 year-class (13-24 centimeters or 5.1-9.4 inches) were tagged on the eastern edge of Stellwagen Bank in 22-24 fathoms. The fish were taken in a $1\frac{1}{2}$-inch mesh cotton cover attached to the cod end of a standard No. 41 otter trawl. The net was towed at about one-half normal towing speed (170 r.p.m. or about 2 knots).

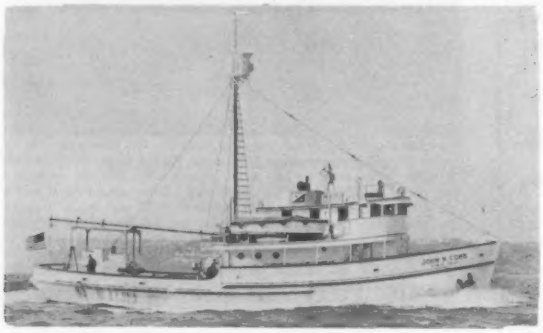
High turbidity and a cable failure prevented completion of underwater television tests. Methods developed for handling and positioning will be useful for future television work with trawls.

The haddock caught for tagging were generally in excellent condition and very lively. Somewhat higher than expected mortality occurred with fish kept in the 5,000-gallon tank for transplanting (about 50 percent with 550 fish accumulated over 30 hours, less for fewer fish and shorter retention period).

Two lots of live herring, taken in the small mesh cover, were returned to port for serological analyses. Drift bottles were released and hydrographic observations were made over the whole area.

North Pacific Exploratory Fishery Program

MODIFIED OTTER TRAWLS TESTED FOR VERTICAL AND HORIZONTAL OPENINGS (M/V John N. Cobb Cruise 41): Fishing-gear research in the waters of Puget Sound and the eastern end of the Strait of Juan de Fuca was conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb during a 45-day cruise which ended on March 25, 1959. Two types of modified otter trawls for bottom fish were tested: one designed to increase the horizontal opening, and the other designed to increase the vertical opening. In addition, three types of otter doors were compared as to their relative spreading ability.



The Bureau's exploratory fishing vessel John N. Cobb.

Although favorable preliminary results were obtained during experiments with the modified otter trawls, further modifications and trials will be required to perfect the gear, so that maximum efficiency will be obtained, before undertaking comparative fishing experiments with conventional trawls.

Two types of light aluminum doors were compared to standard 5-foot wooden shrimp doors on a standard 43-foot Gulf of Mexico-type flat shrimp trawl. The variance in size, shape, and weight of the three doors was so great that a complete appraisal could not be made at this time.

SCUBA divers, making underwater observations, measurements, and evaluations from a diving sled, greatly expedited all phases of the gear research activities. Participating gear specialists consider direct underwater observation indispensible to this type of work. Underwater work was supplemented with surface measurements of water speed, dynamic forces, and distances between floats streamed from various parts of the fishing gear.

The M/V John N. Cobb was scheduled to leave Seattle on April 13, 1959, for a three-week cruise which will combine fishing-gear instrumentation research and English "sole" migration studies. The work will be done off the northern Oregon Coast between Cascade Head and the Columbia River. Fishing-gear instrumentation research plans included: (1) checking out a new Norwegian-made depth-sounder which was designed to operate at depths up to 1,000 fathoms; (2) evaluating the fatigue properties of a new-type electrical trawl cable used in connection with telemetering information from fishing gear to the vessel; (3) testing an on-bottom indicator which will cause a light to go on in the wheelhouse when the trawl door is in

contact with the ocean floor; and (4) testing an automatic bottom sampler which will be attached to a trawl door. English "sole" taken while testing gear will be tagged by biologists of the Oregon Fish Commission. The tagging will be a continuance of the Oregon Fish Commission's program involving the study of migrational habits of commercial species of fish found in waters contiguous to that State. Gear instrumentation work was planned for various depths up to 1,000 fathoms and on different types of ocean bottom.

North Pacific Fishery Investigations

ALBACORE TUNA MIGRATION ROUTE STUDIED: From April 29 to June 16 the U. S. Bureau of Commercial Fisheries research vessel Hugh M. Smith is scheduled to cruise to the locality which adjoins the area of the normal United States west coast summer albacore fishery. The biologists of the Bureau are studying the migration route and time of entry of the albacore into the fishery. The California Department of Fish and Game planned to participate in this investigation.

Oysters

NEW YORK AND CONNECTICUT APPROPRIATE FUNDS TO COMBAT STARFISH: The States of New York and Connecticut have appropriated $25,000 to carry on research on control work for starfish--oyster predators--in Long Island Sound. Action was taken in both Legislatures and plans are being made to coordinate their work with that of the U. S. Bureau of Commercial Fisheries Shellfish Laboratory at Milford, Conn.

These steps were taken to clear the way for endorsement of the starfish control legislation now pending before the United States 86th Congress. Last year the legislation failed to win the support of the Executive Branch of the Government on the grounds that no efforts were being made by the states to solve the problem locally.

Pacific Oceanic Fishery Investigations

SURVEY OF CALIFORNIA CURRENT EXTENSION AND SKIPJACK TUNA OFF HAWAIIAN ISLANDS (M/V Hugh M. Smith Cruise 51): The studies of the California Current Extension and the occurrence of skipjack tuna and other marine organisms in the current area around the Hawaiian Islands was continued by the U. S. Bureau of Commercial Fisheries research vessel Hugh M. Smith from March 3-April 6, 1959.

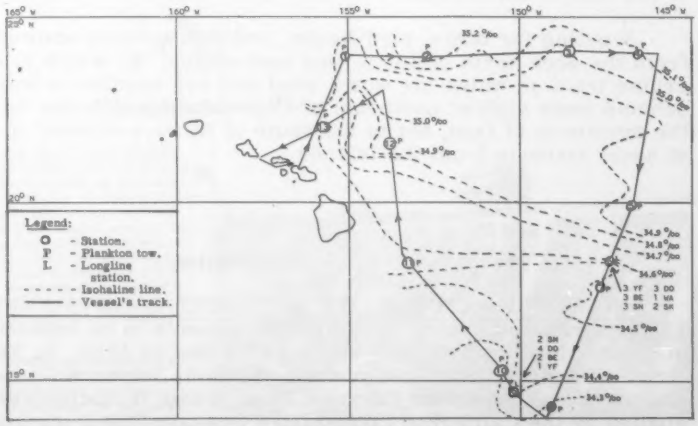


Fig. 1 - Track chart (first survey) of the M/V Hugh M. Smith Cruise 51.

Bathythermograph and surface salinity samples were obtained at 30-mile intervals throughout the cruise. Salinity determinations were made aboard the vessel and were used to a certain extent to determine the limits of the survey area. Duplicate salinity samples were retained for analysis ashore.

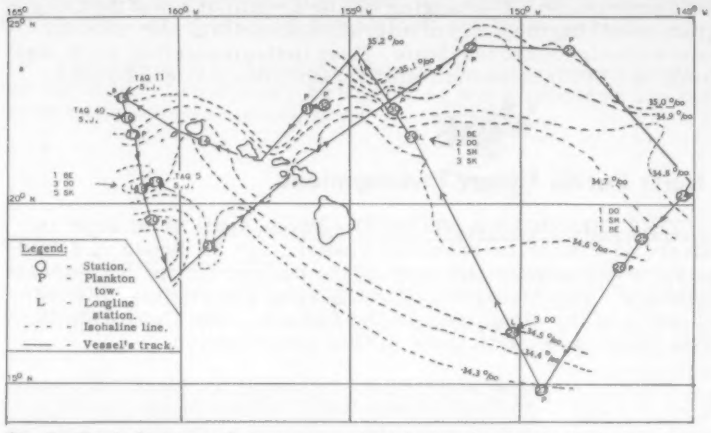


Fig. 2 - Track chart (second survey--approximately 4 weeks after the first) of the M/V Hugh M. Smith Cruise 51.

During the first survey to the east of the Islands, water of intermediate salinity (greater than 34.4 but less than 34.8 parts per thousand) was found from 19° N. to 15° N. on the easternmost leg where it appears to have displaced lower salinity water in the interval (approximately 2 months) since the Hugh M. Smith cruise of January-February.

In the survey to the west of the Islands intermediate salinity water was found between Nihoa Island and 20° N. This was an area in which high salinity water had been observed during the previous cruise (cruise 50).

In the second survey to the east of the Hawaiian Islands (approximately 4 weeks after the first), the extent of the intermediate salinity water had noticeably increased.

Thirty-two stations were occupied during the skipjack scouting phase of the cruise in the California Current Extension, its boundaries, and adjacent waters of which 6 were long-line stations with 40 baskets of 11-hook gear. Of the remaining stations, 3 were pole-and-line fishing stations where skipjack were caught and tagged, 21 were 0-60 meter oblique plankton tows, and 2 were surface plankton tows. Adverse sea conditions prohibited the occupation of fishing stations north of 20° N. to the east of the Islands.

Scouting for birds, bird flocks, and fish schools showed that they were absent from the area north of 20° N. and east of 155° W. which is also the portion of the cruise track in which the worst wind and sea conditions were encountered. Skipjack schools were sighted northeast of Oahu Island and in the vicinity of Nihoa Island in the proximity of land, but to the south of Nihoa a number of schools were observed at some distance from the Islands.

Sardines

SPAWNING PATTERN OFF SOUTHERN CALIFORNIA IN 1959 SIMILAR TO 1958: Sardine spawning in early 1959 appears to be repeating the general pattern of distribution, both in time and area, of that in 1958. In February, spawning centered off central Baja California in the Santa Barbara Channel Island and the southern portion of Sebastian Viscaino Bay. Water temperatures throughout the area studied by the California Cooperative Oceanic Fisheries Investigations were warmer than average, although when compared with the unusually high temperatures of 1958, a decrease of approximately 0.5° C. is apparent.

The presence of fairly heavy sardine spawning off southern California in February 1959 and 1958 is a marked departure from the seasonal distribution during 1950-1957, when nearly 98 percent of the spawning was confined to the period April through July.

Shrimp

GULF OF MEXICO BIOLOGICAL INVESTIGATIONS: A statistical analysis of the data on the total catch of and fishing effort on shrimp in the Gulf of Mexico within statistical areas is being made by the Fishery Biological Laboratory of the U. S. Bureau of Commercial Fisheries at Galveston, Texas. A gross analysis shows that the catch has gradually declined in relation to fishing intensity since 1957.

The Laboratory plans to stain shrimp on the nursery grounds near Galveston. This work should reveal their movements from the nursery grounds to the offshore spawning areas.

Research on a typical nursery area is being continued. This work shows promise of defining the complex ecology of the shrimp nursery grounds and will show when the brown and the white shrimp larvae arrive from the sea and then depart to the offshore waters as the season progresses.

The Laboratory staff will try to determine the physiology, tolerance, and response of shrimp to various conditions and their nutritional requirements.

* * * * *

UNITED STATES PACK OF MANUFACTURED PRODUCTS, 1957--CORRECTION: In the March 1959 issue, page 47, of this publication, in the table headed "United States Manufactured Shrimp Products, 1956-1957," the quantities given (in 1,000 lbs.) under "Canned: Specialties (aspic, cocktails, spreads, soups, and stews)". . . .should read 394 (instead of 123) for 1957 and 571 (instead of 178) for 1956. The "Total canned" should read 9,514 (instead of 9,243) for 1957 and 14,207 (instead of 13,814) for 1956. The "Total for all products" should read 134,474 (instead of 134,203) for 1957 and 140,736 (instead of 140,343) for 1956. The values are correct as shown.

Susquehanna River

FISHERY STUDY IN CONJUNCTION WITH CONOWINGO DAM: A three-year Susquehanna River fishery study is designed to provide a sound biological basis for decision as to whether or not passage should be provided for migratory fish at Conowingo Dam. The broad study, begun in 1958, deals with the kinds and numbers of fish that reach Conowingo Dam, as well as those in the reservoirs above the dam, and the estimation of the effects of passage on these fish, their basic biology, population size, spawning, and the effects of dam operation on young and adult fish. One of the most important aspects deals with the present condition of the environment of the reservoir in relation to the basic needs of eggs and fry of migratory fish that might spawn there.

Hydrographic research work in Conowingo Lake will be devoted to the determination of: (1) character of water movements in relation to inflow, outflow, wind, and temperature layers below the surface; (2) location, nature, and changes in temperature in the impoundment; (3) character of bottom materials, amount of suspended sediment, and

how this suspension restricts light penetration in the reservoir; (4) seasonal distribution of dissolved oxygen, acidity, and alkalinity (pH) at various depths and locations in the reservoir; and (5) the presence of any toxicants or pollutants in the reservoir.

The Susquehanna fishery study is administered by the Maryland Department of Research and Education, sponsored by the Philadelphia Electric Company, and monitored by an Advisory Committee made up of internationally-known fishery biologists. Studies on the physical character of Conowingo Lake are being made by oceanographers of the Chesapeake Bay Institute of the Johns Hopkins University.

Fishermen have contributed greatly to the success of 1958 and 1959 studies of fish movements and fish harvest and intensity in the Lower Susquehanna River. Local and out-of-state fishermen in Maryland and Pennsylvania have been diligent and cooperative in turning in tags from striped bass and shad and providing necessary information to biologists making creel surveys.

In 1958, for example, 5,478 fish were tagged, of which 4,034 were planted above Conowingo Dam. Of these, 2,983 were shad, and 2,495 were striped bass. From tags returned to the biologists, it was possible to estimate that about 400 shad and 500 striped bass survived downstream passage through the turbines of Conowingo Dam. Shad recaptures, incidentally, were mainly from upper Chesapeake Bay, while some came from Virginia, and one was taken off Portland, Maine. Most of the returns from striped bass were from upper Chesapeake Bay.

The creel survey from April through November 1958, was based on three areas: (1) Conowingo Lake; (2) catwalk on the tailrace of the Dam; and (3) lower Susquehanna River below the Dam to Chesapeake Bay and indicated a high fishing intensity.

Biologists estimated that 73 percent of the fishermen in tidal waters were nonresident and 14 percent in inland waters were nonresident. They discovered that 99 percent of the nonresidents were from Pennsylvania. Tidal waters in the lower Susquehanna River extend from the confluence with Chesapeake Bay to Port Deposit, where an artificial boundary is defined by law. Inland waters extend upstream.

Fishermen once again are asked to look out for tagged shad and striped bass. This phase is being carried out with U. S. Fish and Wildlife Service tags. When returned with full information of where, when, how the fish was caught or found, a reward of $1.00 is paid for each tag.

Tuna

TAGGED FISH RECOVERED OFF JAPAN AND GALAPAGOS ISLANDS: Further evidence of a relationship between the United States west coast and Japanese albacore fisheries turned up when the California Department of Fish and Game received an albacore tag from Japan. The return was the sixth albacore that had been tagged off California and subsequently recaptured in the Japanese fishery.

The latest trans-Pacific recovery was tagged 150 miles south of San Diego in July 1957, and recaptured on long-line gear about 700 miles southeast of Tokyo, 19½ months later--a distance of about 4,800 miles.

Another tuna tag recovery has demonstrated for the first time a relationship between the mainland and the island fisheries off South America. A skipjack tagged in the Gulf of Guayaquil, Peru, was recovered near Cadillac Bank, north of the Galapagos Islands. It had traveled about 720 miles in 45 days.

United States Fishing Fleet[1/] Additions

JANUARY 1959: A total of 29 vessels of 5 net tons and over were issued first documents as fishing craft during January 1959--17 less than in January 1958. The Chesapeake area led with 9 vessels, followed by the South Atlantic with 8, the Gulf 6, the Pacific 3, New England 2, and the Great Lakes with 1 vessel.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, January 1959

Area	January		Total
	1959	1958	1958
	(Number)		
New England	2	1	13
Middle Atlantic	-	1	13
Chesapeake	9	7	99
South Atlantic	8	15	135
Gulf	6	16	270
Pacific	3	6	112
Great Lakes	1	-	10
Alaska	-	-	31
Virgin Islands	-	-	1
Total	29	46	684

1/Includes both commercial and sport fishing craft.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, January 1959

Net Tons	Number
5 to 9	17
10 to 19	3
20 to 29	3
30 to 39	2
40 to 49	3
90 to 99	1
Total	29

FEBRUARY 1959: A total of 27 vessels of 5 net tons and over were issued first documents as fishing craft during February 1959. Compared with the same month in 1958, this was a decrease of 23 vessels. The Gulf area led all other areas with 10 vessels. The Pacific area ranked second with 5 vessels, followed by the Chesapeake and South Atlantic areas with 4 each, and the Great Lakes and Alaska areas with 2 each.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, February 1959

Area	February		Jan.-Feb.		Total
	1959	1958	1959	1958	1958
	(Number)				
New England	-	1	2	2	13
Middle Atlantic	-	2	-	3	13
Chesapeake	4	10	13	17	99
South Atlantic	4	8	12	23	135
Gulf	10	19	16	35	270
Pacific	5	7	8	13	112
Great Lakes	2	2	3	2	10
Alaska	2	-	2	-	31
Virgin Islands	-	1	-	1	1
Total	27	50	56	96	684

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, February 1959

Net Tons	Number
5 to 9	12
10 to 19	3
20 to 29	4
30 to 39	6
40 to 49	1
360 to 369	1
Total	27

During the first two months of 1959, a total of 56 vessels received first documents as fishing craft, as compared with 96 vessels documented in a similar period of 1958.

Note: Vessels assigned to the various sections on the basis of their home ports.

U. S. Fish Stick Production, January-March 1959

The United States January-March 1959 production of fish sticks amounted to 18.3 million pounds, and the production of fish portions totaled 8.9 million pounds.

Table 1 - U. S. Production of Fish Sticks by Months and Type, January-March 1959 1/

Month	Cooked	Uncooked	Total
	(1,000 Lbs.)		
January	5,746	570	6,316
February	5,807	587	6,394
March	5,172	450	5,622
Total	16,725	1,607	18,332

1/ Preliminary data.

This was an increase of 1.4 million pounds or 8 percent in fish sticks and 4.2 million pounds or 89 percent in portions as compared with the same period of 1958.

Table 2 - U. S. Production of Fish Sticks by Areas, January-March 1958 and 1959

Area	1959 1/		1958 2/	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	24	15,203	24	14,074
Inland and Gulf States	5	1,712	4	1,433
Pacific Coast States	10	1,417	12	1,415
Total	39	18,332	40	16,922

1/ Preliminary 2/ Revised.

Cooked fish sticks (16.7 million pounds) made up 91 percent of the fish stick total. The remaining 1.6 million pounds or 9 percent consisted of uncooked fish sticks. A total of 8.2 million pounds of breaded fish portions (of which 6.5 million pounds

Table 3 - U. S. Production of Fish Sticks by Months, 1955-59

Month	1959[1/]	1958[2/]	1957	1956	1955
			(1,000 Lbs.)		
January	6,316	5,471	4,261	4,862	5,345
February	6,394	5,925	5,246	5,323	5,794
March	5,622	5,526	5,147	6,082	7,205
April	-	4,855	4,492	3,771	5,953
May	-	4,229	3,380	3,873	4,879
June	-	4,702	3,522	3,580	5,392
July	-	4,574	3,821	3,153	4,340
August	-	4,358	4,643	4,166	4,520
September	-	5,328	4,861	4,085	4,535
October	-	5,485	5,162	5,063	5,261
November	-	5,091	4,579	4,585	4,946
December	-	5,359	4,014	4,019	4,876
Total	18,332	60,903	53,128	52,562	63,046

1/ Preliminary. 2/ Revised.

were uncooked) and nearly 0.7 million pounds of unbreaded portions was processed during the first quarter of 1959. Compared with the same period of 1958

Table 4 - U. S. Production of Fish Portions[1/] by Months and Type, January-March 1959[2/]

Month	Breaded			Unbreaded	Total
	Cooked	Uncooked	Total		
			(1,000 Lbs.)		
January	579	1,929	2,508	157	2,665
February	572	2,298	2,870	126	2,996
March	531	2,289	2,820	383	3,203
Total	1,682	6,516	8,198	666	8,864

1/ Production from blocks. 2/ Preliminary

this was an increase of 94 percent in breaded portions and 43 percent in unbreaded portions.

Table 5 - U. S. Production of Fish Portions by Areas, January-March 1958 and 1959

Area	1959[1/]		1958	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	20	5,412	18	2,451
Interior, Gulf, and Pacific Coast States	10	3,452	7	2,247
Total	30	8,864	25	4,698

1/ Preliminary.

The Atlantic Coast States led all other areas in the production of fish sticks and portions with 15.2 million and 5.4 million pounds, respectively. The remaining 3.1 million pounds of fish sticks and 3.5 million pounds of portions were in the inland, Gulf, and Pacific Coast States.

Table 6 - U. S. Production of Fish Portions, by Months, 1958-1959

Month	1959[1/]	1958	Month	1959[1/]	1958
	(1,000 Lbs.)			(1,000 Lbs.)	
January	2,665	1,973	July	-	2,161
February	2,996	1,254	August	-	1,516
March	3,203	1,471	September	-	1,566
April	-	2,268	October	-	2,560
May	-	1,478	November	-	1,979
June	-	1,504	December	-	2,060
Contd. in opposite column			Total	8,864	21,790

1/ Preliminary.

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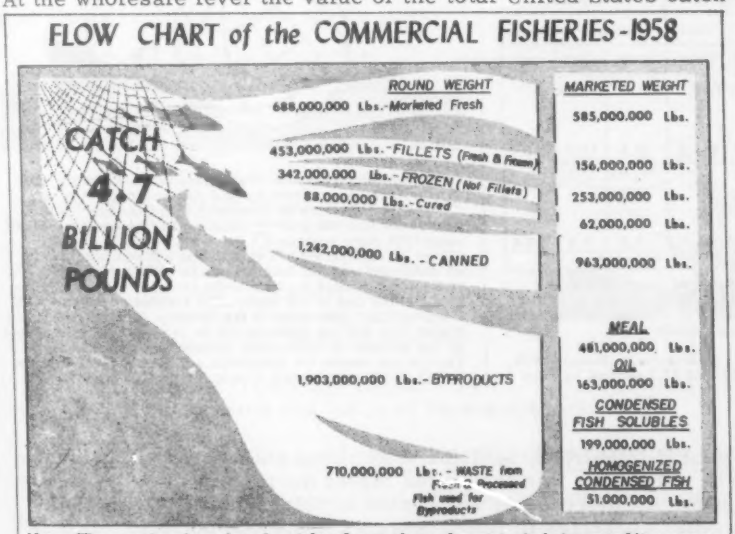
United States Fishing Industry Investments Exceed a Billion Dollars

Fishermen, processors, and distributors have a capital investment of more than a billion dollars in the United States fishing industry. The estimated retail value of fishery products marketed during 1958 was more than $1.7 billion.

The domestic catch in 1958 was 4.72 billion pounds, a decrease of 62 million pounds; but the ex-vessel value of the catch was a record $370 million, an increase of $19 million over 1957. Imports from 1957 to 1958 were up the equivalent of 290 million pounds on a live-weight basis, which makes a net gain in the total supply of fish and shellfish for 1958 of 228 million pounds. This means that 7.4 billion pounds (live weight) was available for the American market.

The per capita consumption of fishery products in 1958 was 10.4 pounds, or 0.3 pounds higher than in 1957.

The $370 million value of the catch as landed increased to $633 million at the processor level for the products produced from domestic-caught fish and shellfish. At the wholesale level the value of the total United States catch was estimated at $882 million and to the retailer at $1.2 billion.



Note: The round and marketed weights shown above do not include imported items processed in the United States. The marketed weights listed do not include fresh bait, or animal food prepared from waste, shell products, or other miscellaneous byproducts.

The value of the imported fishery products which were received fresh, frozen, and otherwise processed was $320 million. Imported items processed in the United States were worth $155 million after manufacturing. The value of the imports reached $502 million at the wholesale level and $552 million when they reached the retailer. Domestically-caught fish and imports were valued at $788 million to the processor, $1,384 million to the wholesaler, and $1,702 million to the retailer.

The domestic producers of fish have $411.5 million invested in boats and $89.0 million invested in fishing gear. The fisheries provide employment for 142,000 fishermen and transporters and 97,000 persons in wholesale and manufacturing establishments. A total of $242.6 million is invested in freezing and processing plants and $217.6 million in wholesale fish houses. The value of the facilities for handling fish at the retail level is placed at $111 million. The grand total investment on the basis of these data is $1,072 million.

A total of 40 percent of the domestic catch was converted into byproducts--oil, meal or solubles--or used as bait. More than 31 percent, or 1,483 million pounds, was utilized fresh or frozen for human food; over 26 percent, or 1,242 million pounds, was canned; and 88 million pounds, nearly 2 percent, were cured.

The Atlantic coast produced 53 percent of the domestic catch or 2,502 million pounds. Other producing areas show: Pacific coast, 904 million pounds; Gulf coast 780 million pounds; Alaska 380 million pounds; Great Lakes and Mississippi River, 150 million pounds.

U. S. Foreign Trade

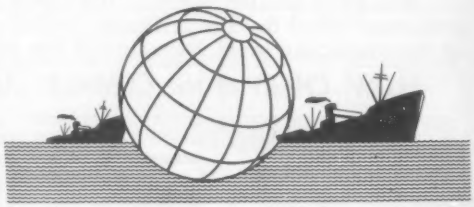
EDIBLE FISHERY PRODUCTS, JANUARY 1959: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during January 1959 increased by 11.8 percent in quantity and 6.0 percent in value as compared with December 1958. The increase was due primarily to higher imports of groundfish fillets (up 11.3 million pounds) and canned tuna in brine (up 4.5 million pounds), and to a lesser degree, an increase in the imports of other fillets and frozen tuna. These increases were partly offset by a 2.2 million-pound decrease in the imports of frozen shrimp and canned salmon (down 1.2 million pounds).

United States Foreign Trade in Edible Fishery Products, January 1959 with Comparisons

Item	Quantity			Value		
	January		Year	January		Year
	1959	1958	1958	1959	1958	1958
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish: Fresh, frozen, & processed 1/	88.2	67.6	956.8	24.8	19.5	278.4
Exports:						
Fish and shellfish: Processed only 1/ (excluding fresh & frozen)	2.4	2.6	41.2	0.8	0.6	15.6

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

Compared with January 1958, the imports in January 1959 were up by 30.3 percent in quantity and 27.2 percent in value due to higher imports of groundfish fillets (up 7.6 million pounds), frozen tuna other than albacore (up 8.8 million pounds), canned tuna in brine (up 3.2 million pounds), and frozen shrimp (up 2.5 million pounds). Compensating, in part, for the increases was a drop of about 2.5 million pounds in the imports of frozen albacore tuna and frozen and canned salmon (down 3.0 million pounds).



United States exports of processed fish and shellfish in January 1959 were lower by 46.0 percent in quantity and 33.3 percent in value as compared with December 1958. Compared with the same month in 1958, the exports in January 1959 were down by 6.1 percent in quantity, but were higher by 33.3 percent in value. The exports this January as compared with the same month in 1958 were lower due to the poor demand for California sardines in foreign markets and the lack of any exportable surplus of other canned fish products. The value of the January 1959 exports was higher than for the same month in 1958 due to an increase in the exports of high-value canned shrimp and salmon. The fishing season for California sardines ended on December 31, 1958, with a pack of over 2.2 million cases.

* * * * *

GROUNDFISH FILLET IMPORTS, MARCH 1959: Imports of groundfish (including ocean perch) fillets and blocks into the United States during March 1959 amounted to 12.1 million pounds--an increase of 18 percent compared with March of last year. Canada led all other countries in imports with 4.1 million pounds. Iceland was second with 3.5 million pounds, followed by Denmark with 2.4 million pounds, and Norway with 1.6 million pounds.

During the first three months of 1959, imports of groundfish (including ocean perch) and blocks amounted to 41.5 million pounds, about 30 percent above the same period of last year. Canada accounted for 41 percent of the total imports during the 1959 three-months period.

The quota of groundfish (and ocean perch fillets) and blocks permitted to enter the United States at $1\frac{7}{8}$ cents per pound in the calendar year 1959 is 36,919,874 pounds, based on a quarterly quota of 9,229,968 pounds. The quota for the calendar year 1958 amounted to 35,892,221 pounds. Imports during individual quarters in excess of the established quarterly quota enter at a duty of $2\frac{1}{2}$ cents per pound.

Note: See chart 7 in this issue.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1959 at the 12½-percent rate of duty has been established as 52,372,574 pounds. Any imports in excess of this established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-April 4, 1959, amounted to 11,308,844 pounds, according to data compiled by the Bureau of Customs. From January 1-March 29, 1958, a total of 8,352,090 pounds had been imported. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.

Vessel Safety Program

COMMITTEE FORMED IN MAINE TO PROMOTE PROGRAM: The first "Port Safety Committee" for fisheries in the United States was formed in Maine through the efforts of the U. S. Bureau of Commercial Fisheries Fishing Vessel Safety Program in New England. Fishery leaders at Portland announced April 2 that the Committee was formed and would work with the Bureau's Safety Program to develop a safety and health program for the Maine fishing fleets. Initial activities of the Committee will be confined to Portland vessels with a gradual expansion to all commercial fishing craft based in Maine ports.

The Committee represents people directly interested in the welfare of the Maine fishing industry with diversified experience in vessel operation, marine insurance and inspection, engineering and construction, and fishing vessel maintenance.

The primary objective of the Committee will be to provide leadership for the industry in establishing a practical accident-prevention and health program for commercial fishing vessels in the State of Maine. Action under consideration by the Committee to initiate the program was stated to include the following measures:

1. Establish a frequency accident rate for the Portland fishing fleet based on disabling work injuries and hull and machinery accidents.

2. Improve working conditions and eliminate hazards aboard fishing vessels.

3. Study accident reports to devise ways to direct accident prevention and elimination of unsafe conditions that may exist in the fleet.

4. Establish a code of safety standards for various classes of vessels engaged in the otter-trawl, scallop-dredge, and purse-seine fisheries.

5. Make available facilities to encourage safe operating practices and demonstrate approved devices and equipment to all industry members.

6. Promote the idea of fleet safety at all times, and by exercising control of operational precedures to reduce the accident rate and effect a reduction in marine insurance premiums to vessel operators.

The U. S. Bureau of Commercial Fisheries Safety Program hopes to assist in forming similar committees in the ports of Gloucester and New Bedford, Mass.

Ways Sought to Control Mosquito Without Harming Fish and Wildlife

The need for research to develop mosquito control methods compatible with fish and wildlife management objectives was stressed by most speakers participating in a mosquito control-fish and wildlife management symposium held in mid-April 1959 in the Department of the Interior Building, Washington, D. C. The purpose of symposium was to provide a better understanding of mosquito control and wildlife management objectives and methods, and to explore possibilities for a greater coordination of interests where conflicts exist.

Malarial Mosquito (Anopheles maculippenis)
(Resting position)

About 75 persons actively engaged in mosquito control or wildlife management in the eastern portion of the United States attended the meeting. A feature of the two-day session was a constructive group discussion following the presentation of 12 prepared papers.

Because of the growing resistance of mosquitoes to many insecticides and the damage that these chemicals may cause to fish, shellfish, and wildlife, the trend in present-day control programs is toward the use of water management and biological control methods. Ditching and filling are widely used but since these practices often adversely affect fish or wildlife, there is a growing recognition by mosquito control workers that effective substitute methods are needed.

Cooperative studies by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service, and other agencies in Delaware and New Jersey, from 1953 to 1955 showed the value of controlled flooding as a means of mosquito abatement in some areas. Under this system, the production of salt-marsh mosquitoes was virtually halted by preventing the exposure of soil upon which the pests lay their eggs. At the same time, waterfowl conditions were greatly improved. This method is now being used in suitable situations in Florida for the control of mosquitoes.

The symposium, the first of its kind, was sponsored jointly by the American Mosquito Control Association, the Bureau of Sport Fisheries and Wildlife, the Wildlife Society, the Agricultural Research Service of the U. S. Department of Agriculture, and the United States Public Health Service.

Papers on the first day were restricted to the fundamentals of mosquito biology and control and to the fundamentals of wetland management for fish and wildlife. Papers on the second day included reviews of methods of mosquito control by chemicals and by water management, their effects on various types of fish and wildlife, and the effects of fish and wildlife water-development projects on mosquito breeding.

Proceedings of the meeting will be available at $1 a copy through the American Mosquito Control Association, Morris Plains, N. J.

Wholesale Prices, April 1959

Wholesale prices for selected edible fishery products in mid-April 1959 continued the downward trend of the past few months. Lower wholesale prices for fresh haddock, fresh and frozen fillets, and fresh and frozen shrimp were responsible for a drop of 4.3 percent in the index from March to April this year. The April 1959 edible fish and shellfish (fresh, frozen, and canned) wholesale price index (122.7 percent of the 1947-49 average) was about unchanged (down 0.2 percent) from the same month in 1958. Higher wholesale prices for the fresh-water varieties, frozen haddock fillets, frozen salmon, and canned Maine sardines were more than offset by lower prices for all other items that enter the fishery products wholesale index.

The April 1959 wholesale price index for the drawn, dressed, and whole finfish declined 7.6 percent from the preceding month due to a sharp seasonal drop (49.1 percent) in the drawn fresh haddock price and slightly lower wholesale prices for frozen halibut and yellow pike. Increases in wholesale prices for whitefish (due to short supplies and good demand) and frozen salmon failed to offset lower prices for the other subgroup items. The subgroup wholesale price index this April as compared with April a year ago was up by 14.8 percent due to higher wholesale prices for all the fresh-water items and frozen king salmon. Fresh drawn haddock (down 6.1 percent) and frozen western halibut prices (down 2.5 percent) were lower in April this year as compared with April a year ago.

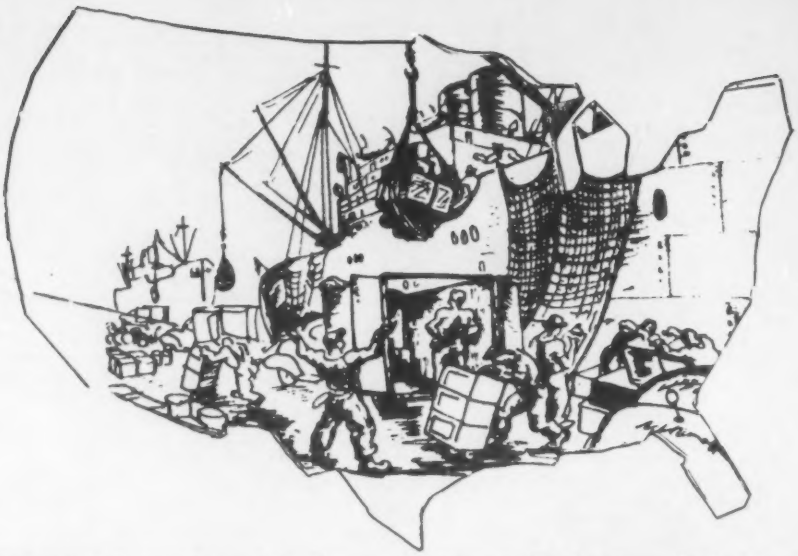
The fresh processed fish and shellfish subgroup index from March to April this year dropped 6.4 percent due to a drop in wholesale prices for fresh haddock fillets (down 40.0 percent) and fresh shrimp (down 4.5 percent). The subgroup index in April 1959 as compared with April last year was lower by 3.9 percent. Lower wholesale prices for fresh haddock fillets (minus 9.5 percent) and fresh shrimp (minus 7.5 percent) more than offset slightly higher prices for fresh shucked oysters.

Further declines in wholesale prices for domestic and imported frozen shrimp at Chicago and frozen haddock fillets at Boston from March to April this year resulted in a 4.2 percent decline in the index for the frozen processed fish fillet and shellfish subgroup. From April 1958 to April this year the wholesale price index fell 3.1 percent due primarily to lower frozen shrimp prices (down 5.7 percent). Frozen fillet prices in April 1959 when compared with April last year were unchanged, except for frozen haddock fillets which were higher by 1.4 percent.

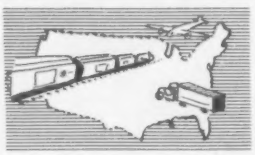
Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1959 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			Apr. 1959	Mar. 1959	Apr. 1959	Mar. 1959	Feb. 1959	Apr. 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					122.7	128.2	133.7	122.9
Fresh & Frozen Fishery Products:					139.6	148.8	157.9	136.4
Drawn, Dressed, or Whole Finfish:					141.9	153.6	170.9	123.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.8	.15	76.0	149.2	212.8	80.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.33	.33	102.1	103.1	102.6	104.7
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.76	.75	171.3	168.5	173.0	149.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.98	.67	241.7	166.1	190.9	183.4
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	1.08	.80	217.4	161.8	161.8	136.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.71	.73	166.5	170.0	173.5	72.7
Processed, Fresh (Fish & Shellfish):					136.5	145.8	151.1	142.0
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.29	.48	97.0	161.6	205.9	107.2
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.87	.91	137.4	143.8	145.3	148.5
Oysters, shucked, standards	Norfolk	gal.	5.75	5.88	142.3	145.4	148.5	139.2
Processed, Frozen (Fish & Shellfish):					128.3	2/133.9	137.4	132.4
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.41	103.4	106.0	108.6	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.36	.40	111.4	124.0	131.8	109.9
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.30	.30	118.8	118.8	124.9	118.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.83	.86	128.1	132.3	133.8	135.8
Canned Fishery Products:					99.0	98.8	98.8	104.3
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.50	22.25	117.4	116.1	116.1	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	84.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.00	7.40	82.2	86.9	86.6	132.4
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.22	8.22	87.5	87.5	87.5	79.8

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.
2/ Revised.



From March to April the over-all canned fish subgroup index dropped slightly (down 0.2 percent) due to a 5.4 percent lower canned California sardines price. Canned pink salmon was up about 25 cents a case and the two other canned fish items (Maine sardines and tuna) were unchanged from March to April. Canned fish prices in April this year were lower by 5.1 percent when compared with the same month in 1958. All canned fish products in the subgroup were lower except for Maine sardines which was up about 9.6 percent. The most pronounced change in price levels between April last year and April this year was for California sardines--down 37.9 percent. As of mid-April this year the market for canned Maine sardines and all types of canned salmon was firm, but the record-size pack of canned tuna was exerting some pressure on primary price levels for this product. The market for canned California sardines appeared to be firmer following a price decrease and the remaining stocks from the 1958 pack are firmly held.



BOIL-IN-BAG FOOD PRODUCTS

The housewife is now finding an ever-increasing variety of frozen food products packaged in airtight plastic bags. The product is cooked by immersing the unopened bag in boiling water. Advocates of this method of packaging claim that plastic bags retain flavor even better than most other types of packaging and cooking. Using this method, a housewife can prepare as many as six courses with the use of a single pot of boiling water.

Since this method of packaging and preparation seems to be "catching on," fish processors may wish to explore the possibility of using this packaging technique with fishery products. A few fishery products are being packaged in this manner.

International

NORTHWEST PACIFIC FISHERIES COMMISSION

RUSSIA MODIFIES PROPOSALS FOR JAPANESE NORTHWEST PACIFIC SALMON FISHING:

On March 25 and 26, 1959, the Soviet delegates to the Northwest Pacific Fisheries Commission added to the four salmon fishing areas already offered to the Japanese a fifth, extending from 175° E. to 175° W. longitude; dropped their earlier demand that starting dates for fishing be prescribed; and made an initial catch quota of 50,000 metric tons to the Japanese, who had asked for 165,000 tons. The Japanese promptly termed the Soviet proposals unacceptable, but will continue to discuss them within the Commission.

On March 7 the Soviet delegation to the Japan-Soviet Commission for the Northwest Pacific Fisheries, currently holding its annual meeting at Tokyo, proposed a plan under which Japanese high-seas salmon fishing in 1959 would be confined to four areas west of 170° E. longitude. Both the opening and closing dates for fishing in these areas were to be prescribed, and in no case would the fishing period be longer than from June 1 to July 31.

The Japanese rejected this plan out of hand, claiming that it was contrary to the spirit of the fisheries treaty, that the establishment of closed areas far off shore is without any sound basis in salmon conservation practice, and that the closing of large areas of the ocean is an infringement of "the freedom of the high seas." The Soviet delegation estimated that the Japanese would be able to catch as much as 70 percent of their average salmon catch of the past three years within the proposed fishing areas. The Japanese, on the other hand, estimated that they could not catch more than 30,000 to 40,000 tons within the proposed area and time limitations.

The negotiations were stalemated at this point for about two weeks, the Japanese refusing to discuss the Soviet proposal seriously until the Russians agreed to reveal their ideas on the total salmon catch quota for the Japanese fishery, and the Soviet delegation declining to talk catch quotas until the Japanese came to terms on fishing restrictions.

On March 25 the Soviet delegation moved to break the deadlock by offering a modification of their original proposal. This modification, which was placed before the Commission in the morning and explained at a press conference in the afternoon by the chief Soviet spokesman, would more than double the area open to Japanese fishing under the first Russian plan. Not only would the original four areas in the west be slightly enlarged, but the whole area between 175° E. and 175° W. longitude would be added as a fifth fishing zone. As an additional concession, the Russians dropped their proposal to set dates for the beginning of fishing and set back the closing date for one fishing area by 5 days.

The Japanese again rejected the new Soviet plan, stating that the same objections applied to it as to the original proposal. "Japanese experts" were quoted as saying that the newly proposed fifth fishing area, next to the Provisional Abstention Line of the International North Pacific Fisheries Convention, is one into which few salmon migrate, so that operations there could not be expected to add more than about 10,000 tons to the total catch. The Japanese delegation countered with a proposal that the restrictions imposed on fishing areas last year be continued unchanged this year. These restrictions are simply closed zones 20 to 40 miles wide along the coasts of Soviet territory.

Among the main Japanese arguments against the Soviet-proposed restrictions are the following: (1) Closed areas for conservation are biologically justified only in coastal areas, where the fish are densely congregated for their ascent of the spawning streams; (2) The arbitrary opening of passages for the migrating salmon between fishing areas to the coast is of little use because the paths of migration of the fish vary unpredictably from year to year; (3) It is more rational and puts less pressure on the salmon stocks to disperse the mothership fleets widely, rather than concentrate them within small areas; (4) At last year's conference, Japan agreed that the Sea of Okhotsk be closed to high-seas salmon fishing as a conservation measure from 1959 on. No more closed areas should be established until the effects of the Okhotsk closing have been seen.

At his press conference, the second that he has held during this year's negotiations, the Soviet spokesman complained of the negative attitude shown by the Japanese side in rejecting all Soviet proposals without full discussion. He stressed that before the war Japan had imposed on the high-seas salmon fishery considerably more severe restrictions than those which the U.S.S.R. is now proposing. At that time, he said, the number of motherships was limited to eight, the number of catch boats to 300, and the restrictions on net mesh sizes and the number and dimensions of nets set were stricter than those now in force.

The point of the Soviet spokesman's statement which attracted greatest attention was his revelation that Russia plans to take only 95,000 tons of salmon in the Far East in 1959, as compared with catch goals of 120,000 tons in 1958 and 140,000 tons in 1957. The Japanese press, which is always looking for a hint of the Russian intentions with regard to the Japanese catch quota, seized on this datum as a base point for speculation. On the grounds that in past years' negotiations the Soviet delegation has attempted to hold the Japanese catch quota 10,000 to 20,000 tons below the planned Soviet catch, it was predicted that the Russians would offer Japan a total quota of 80,000 to 90,000 tons of salmon.

However, when the Soviet delegation, on March 26, made its first catch quota offer, the figure was only 50,000 tons, and this was coupled with a demand that the Japanese Government also take steps to restrict the catch in waters south of the treaty area. So meager a quota, in contrast with the original Japanese demand for 165,000 tons, was immediately labeled as unacceptable by Japanese spokesmen, who pointed out that it would mean a cut of more than 50 percent in the scale of the high-seas salmon fishery.

The Japanese Foreign Minister, the Chief Cabinet Secretary, and the Minister of Agriculture all were quoted as saying that the time had not yet come to abandon hope of reaching a settlement within the Fisheries Commission, a type of statement which has of late become an almost automatic followup to each new development in the negotiations. Apparently neither side wants to be the first to call for "political" negotiations. In view of the wide separation of the positions of the two national sections, however, it is being generally predicted that the final agreement will have to be reached at a higher level than the Commission. (United States Embassy dispatch from Tokyo, dated April 1, 1959.)

International (Contd.):

TERRITORIAL WATERS

FAROE ISLANDS FISHING LIMITS AGREEMENT WITH UNITED KINGDOM APPROVED BY DENMARK:

The Danish Folketing with no dissenting votes approved the Faroe Island-United Kingdom territorial waters fishing limits agreement on March 20. The agreement designates how close to the Faroe Islands coast British trawlers can fish and is based on fishing limits of 6 plus 6 miles. Following a week of negotiations, the Faroese Premier and his party returned to the Faroe Islands with the general agreement in their pockets not only for a substantial loan from Danish sources (exact amount undisclosed) for the Premier's development projects, but a commitment to introduce into the Faroe Islands the people's pension system now in force in Denmark and plans for improving other social legislation for the Faroes. (The United States Embassy of Copenhagen reports in a March 24, 1959, dispatch.)

Note: Also see Commercial Fisheries Review, May 1959, p. 52.

WHALING

ANTARCTIC WHALE OIL PRODUCTION LOWER IN 1958/59:

Preliminary production data from 19 of the 20 whaling expeditions operating in the Antarctic in 1958/59 indicate a small decline in Antarctic whale-oil production despite an increase in the catch limit this year. The 1958/59 catch limit was 15,000 blue-whale units, 500 above 1957/58. Antarctic production by country (excluding the Soviet Union) for the 1957/58 and 1958/59 seasons was as follows:

Country and No. of Expeditions	1958/59	1957/58
	(1,000 Short Tons)	
Norway (9)	132	137
Japan (6)	103	97
United Kingdom (3)	41	54
Netherlands (1)	21	19
South Georgia land stations	30	29
Total	327	336

All 3 South Georgia land stations (Norwegian, British, and Argentine) operated this season. The Norwegian station was inactive in 1957/58, reportedly for economic reasons. Output of the reactivated station tended to offset the production decline by the 9 Norwegian factoryships.

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JAPANESE ANTARCTIC WHALING FLEETS HAVE SUCCESSFUL SEASON:

The Antarctic baleen whaling season, which began January 7, 1959, came to an end on March 16 in east longitudes and on March 17 in west longitudes, with 20 fleets from five nations taking a total of 15,288 blue-whale units as against a planned limit of 15,000. By next season the whaling nations are expected to agree on a system of assignment of national catch quotas.

The six Japanese fleets captured about 5,038 blue-whale units, nearly one-third of the total catch, and three of the Japanese factoryships exceeded their catch goals. In the sperm whaling season, which preceded the baleen season, the Japanese fleets also made a good record, taking 1,911 whales as compared with a goal of 1,700 whales (United Embassy in Tokyo, March 27, 1959).

Angola

PRODUCTION AND EXPORTS OF FISH MEAL AND OIL, 1957-1958:

Production: Angola's production of fish meal and oil dropped sharply in 1958 due primarily to a shortage of fish for reduction into meal and oil. In 1958 only 45,034 metric tons of fish meal and 3,505 tons of fish oil were produced as compared with 85,205 tons of fish meal and 7,209 tons of fish oil in 1957.

Exports: Fish meal exports (see table) by Angola in 1958 amounted to 81,243 tons (value US$10.1 million) and in 1957 totaled 94,149 tons (value US$11.4 million). Exports of fish oil in 1958 totaled 8,559 tons, down 3,625 tons from

Angola (Contd.):

the 1957 exports of 12,184 tons. Average prices f.o.b. Angola for fish meal in 1958 were about US$124 a ton, slightly higher than the average of $121.31 a ton for 1957. The reverse was true for 1958 fish oil exports--average f.o.b. prices in 1958 were about $145.09 a ton, down about $28 a ton from the 1957 average of $173 a ton.

Table 1 - Angola's Exports of Fish Oil and Meal in 1958 by Country of Destination

Product and Destination	Quantity	Value	
	Metric Tons	1,000 Escudos	US$1/ 1,000
Fish Oil:			
Germany	7,315	30,200	1,050
Denmark	855	3,751	130
Norway	43	164	6
Portugal	15	60	2
Other countries	331	1,527	53
Total Fish Oil	8,559	35,702	1,241
Fish Meal:			
United States	26,954	94,407	3,284
Holland	23,935	86,651	3,014
Belgium-Luxemborg	9,681	34,330	1,194
Portugal	5,111	19,202	668
Germany	4,818	17,843	621
Austria	4,317	15,244	530
Italy	2,480	8,701	303
Mozambique	290	1,100	38
Other countries	3,657	12,121	422
Total Fish Meal	81,243	289,599	10,073

1/Values converted at rate of 28.75 escudos equal US$1.

In 1958, Germany was far the most important buyer of Angola's fish oil--it bought 7,315 tons (value $1,050,000) or 85.5 percent of the 1958 total exports of 8,559 tons. Denmark was the only other important buyer of Angola's fish oils.

The United States was the leading buyer of Angola's fish meal in 1958 with 26,954 tons or 33.2 percent of the 81,243-ton exports. In 1958, the Netherlands followed the United States with imports of 23,935 tons (29.5 percent) and Belgium-Luxemborg imported 9,681 tons or 11.9 percent, the United States Consul in Luanda reported on March 31, 1959.

Brazil

FISHING INDUSTRY EXPANDING RAPIDILY:

The increased catch of Brazil's expanding fishing fleets has reached such large proportions that Brazil has now become an exporter of fishery products. In only two years, fishery production of the Rio Grande de Sur area has increased tenfold.

During the first half of 1958, Brazil exported to the United States some 500 metric tons of frozen tuna, valued at US$300,000. In 1957, Brazil exported a total of US$400,000 worth of spiny lobsters to the United States.

The Brazilian Government has established a program to increase fishery production, and fishery products exports. The Government plans to increase exports of tuna in 1959 to 15,000 tons, valued at US$9 million. The revenue from more exports will in turn further increase production. This increase in production is based on the use of modern fishing vessels manned by well-trained technicians, and continuing studies of Brazil's marine fauna.

Brazilian fishermen are presently being instructed in the use of modern fishing equipment by Japanese technicians from the five Japanese fishing companies now operating in Brazil. The contracts signed between the Japanese companies and the Brazilian Government stipulate that the Japanese must register their fishing vessels in Brazil after two years and that subordinate officers and two thirds of the crews of the fishing vessels must be Brazilian.

Brazil also plans to expand its whaling industry. The whaling fleet captured 125 whales last season. The take during the coming season is expected to total 500. (Boletin de Informacion, No. 5, February 1959, Sindicato Nacional de la Pesca, Madrid, Spain.)

British Guiana

FISHERIES TRENDS, MARCH 1959:

The fishing industry is not yet making a major contribution to the British Guiana economy; however, Government efforts to improve the industry appear to have been speeded up. The fact that imports of fish and fish products are substantial, and in 1958 totaled almost 6 million pounds, has enhanced the desire to increase local production.

British Guiana (Contd.):

The annual production of fish has been estimated arbitrarily to be about 20 million pounds, and it is believed that about 4,000 persons are employed in the industry. The main sources of fish production are the coastal mudflats and estuaries. Offshore fishing grounds (except for snapper) and inland river fisheries are relatively untouched. The principal means of fishing are "pin" seines, "Chinese" seines, lines, and trawlers.

The research vessel Cape St. Mary, has been continuing its survey operations. This modern ship carried out a trawling survey of the continental shelf between 10 and 20 fathoms. A preliminary review of the ship's work has resulted in an estimate that the most productive waters are at the shallower depths.

The Government Wholesale Fish Marketing Centre continued to be the hub of the industry by purchasing all fish brought to it at fixed prices. With the Cape St. Mary bringing in trips averaging 35,000 pounds, however, the capacity of the Centre frequently was overtaxed. In particular, it was found that the cold-storage and ice-making facilities were very inadequate. As a result of the relatively greater supply of fish, local prices of fresh fish were down from previous levels during most of the year.

An United States enterprise continued shrimp trawling operations throughout the year. Due to a lack of success in finding adequate quantities of shrimp (only 1,839 pounds in 1958), however, activities were sharply curtailed in the latter half of the year.

As regards inland fisheries, the emphasis continued to be on expanding the Government fish culture station at Onverwagt on the west coast of Berbice and encouraging the establishment of small brackish-water fish ponds. By the end of 1958, some 440 fish ponds were in existence. These were stocked principally with Tilapia from the fish hatchery near Georgetown. Efforts continued, also, to encourage the establishment of large cooperative fish ponds.

In July 1958 the Fisheries Sub-committee of the Industrial Development Advisory Committee submitted a report which has been accepted as the basis for future fisheries development. The principal recommendations included government grants and loans for the construction of trawlers; income tax and import duty concessions to fishermen; continuation of a guaranteed market; increased cold-storage and ice facilities; encouragement of fish cooperatives; the further development of fish culture and inland fish ponds; and further efforts to obtain additional International Cooperation Administration (ICA) assistance. The subcommittee also considered but failed to make a definite recommendation concerning the proposal that the Government construct one or more fish processing plants for producing fish meal and salted, smoked, or canned fish.

An ICA fishing expert, an experienced long-line snapper fisherman, visited British Guiana during October and November to demonstrate the use of high-speed fishing reels and teach more efficient use of lines and ancillary equipment.

* * * * *

HOPE FOR SHRIMP FISHERY REVIVED:

Virtually lost hopes for shrimp fishing in the waters off British Guiana were revived by a recent announcement by a British Guiana company that it is planning to undertake a new survey for shrimp off the coasts of the Guianas and northeast Brazil. The improved prospects, it seems, are based on a few good catches of shrimp which were made in March, suggesting the possibility that shrimp may be making an appearance in this area.

According to the company's manager, the six-months survey will be made in association with several other United States shrimp fishing concerns. Reportedly, the companies will provide 12 shrimp trawlers, all of which will operate from Georgetown basing themselves at the facilities of the British Guiana company. On April 8 and 9, four of the trawlers arrived at Georgetown amid a fair amount of publicity.

The possible significance of a shrimp "strike" came in for some discussion in the press. A good shot-in-the-arm would

British Guiana (Contd.):

be provided to the struggling British Guiana fishing industry if shrimp are found in commercial quantities, states a United States Consul dispatch from Georgetown, dated April 13, 1959.

British Honduras

FISHERY PRODUCTS EXPORTS, 1958:

Exports of fishery products by British Honduras in 1958 amounted to 493,379 pounds (value US$173,512), higher by about 31.3 percent in quantity and 29.0 percent in value as compared with 1957. Spiny lobsters (whole and tails) exported to the United States in 1958 totaled 369,028 pounds valued at $157,760. During 1957, 195,639 pounds (value $110,601) and in 1956, 125,251 pounds (value $81,608) of whole and spiny lobster tails were exported to the United States.

British Honduras Exports of Fishery Products, 1958
(Total Exports & Exports to United States)

Products	1958 Quantity	1958 Value
	Lbs.	US$
Fresh, frozen, or live fish:		
Total exports	53,377	6,701
Exports to U. S.	26,608	3,764
Salted, dried fish, etc.:		
Total exports	58,208	6,108
Exports to U. S.	-	-
Spiny lobster, whole and tails:		
Total exports	369,028	157,760
Exports to U. S.	324,768	149,740
Conchs:		
Total exports	2,125	174
Exports to U. S.	500	60
Tortoise shells:		
Total exports	696	1,844
Exports to U. S.	-	-
Unclassified:		
Total exports	9,945	925
Exports to U. S.	320	134
Total all fishery products:		
Total exports	493,379	173,512
Exports to U. S.	352,196	153,698

Exports of fish and shellfish to the United States from British Honduras in 1958 accounted for 71.4 percent of the volume and 88.6 percent of the value. In 1957 exports to the United States made up 62.0 percent of the volume and 87.7 percent of the value. (United States Consulate in Belize, March 24, 1959.)

British West Indies

SPINY LOBSTER FISHING PERMIT GRANTED FOR ST. VINCENT ISLAND:

The St. Vincent Island Government has granted a permit for one year to a Trinidad company to fish for spiny lobsters in waters adjacent to the Island. The company will be allowed to fish for spiny lobsters with pots only and has permission to fish out of and purchase spiny lobsters from the Grenadines. The fishing permit will be reviewed after one year.

Canada

NEWFOUNDLAND FISH PLANT PURCHASED BY UNITED STATES FIRM:

The Newfoundland Minister of Fisheries announced in the House of Assembly on March 18, 1959, that the Fortune Fish Plant, located at Fortune on the south coast of Newfoundland, Canada, had been sold to a large United States fisheries firm with headquarters in Chicago, Ill.

The Fortune Fish Plant, built in 1952, was closed in September 1956. It was financed principally by government funds. Its closing caused much criticism and approximately 225 persons were unemployed. The construction of the fish plant increased the population of the small town of Fortune by 300 persons, many people in the surrounding district leaving their homes in isolated villages and bays to build new homes in the then thriving town of Fortune. It is expected that the plant will start operating in May 1959, and provide employment for between 200 and 300 people, states a United States Consul dispatch from St. John's, dated March 24, 1959.

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NORTH PACIFIC HALIBUT REGULATIONS FOR 1959 APPROVED:

The Pacific Halibut Fishery Regulations for 1959, as adopted by the International Pacific Halibut Commission, were approved by the Canadian Government by Order-in-Council No. PC 1959-255 of March 5, 1959. (United States Embassy in Ottawa, April 7, 1959.)

Note: Also see Commercial Fisheries Review, April 1959, p. 60.

Cuba

CLOSED SEASON FOR BULLFROGS AND CERTAIN FINFISH:

The Cuban National Fisheries Institute by Ministry of Agriculture resolutions published in the Official Gazette of April 1, 1959, imposed a closed season on the capture of mojarras (perch), joturo, biajaca (tripletail), dajao, and bullfrogs. The closed seasons were effective on April 1, 1959, and will remain in force until cancelled by subsequent resolutions.

According to press reports, a group of bullfrog fishermen from the provinces of Las Villas and Habana requested that their union petition the Government to suspend the closed season on the capture of bullfrogs, since such closed seasons had never been imposed in prior years before the end of the month of May. In addition to complaints that the closed season was premature and would deprive them of a source of income, the fishermen protested that they were underpaid for fresh bullfrogs which could be sold at high prices in the United States by Cuban freezing plants (United States Embassy in Havana, April 10, 1959).

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CLOSED SEASONS FOR SHRIMP AND SPINY LOBSTER:

The Cuban National Fisheries Institute by a Ministry of Agriculture resolution published in the Official Gazette No. 40 of March 9, 1959, imposed a closed season on the capture of ocean shrimp and spiny lobster effective March 15, 1959. The closed spiny lobster season will remain in effect until cancelled by a subsequent resolution.

A later resolution (Official Gazette March 18, 1959) canceled the closed season for shrimp effective March 16, 1959. The reason for the cancellation of the shrimp closed season was that the necessary studies warranting a closed season had not been realized (United States Embassy in Havana, dispatches dated March 12 and 25, 1959).

Denmark

GREENLAND PERMITS ADDITIONAL FAROESE VESSELS TO FISH IN ITS WATERS:

The Greenland National Council in Godthaab has agreed to grant their fellow Nationals from the Faroes the right to increase from 60 to 180 the number of Faroese boats fishing in Greenland waters and the right to erect a number of temporary stations on both coasts. The agreement is valid for only one year and the Faroese must observe certain conservation regulations.

Negotiations for long-range joint exploitation of the waters on an equal basis will take place this summer. The Greenland Council also gave notice of a desire for more money for its own vessels and canneries. (United States Embassy in Copenhagen, March 17, 1959.)

Egypt

CONTRACT WITH JAPAN FOR SHRIMP-FREEZING AND SARDINE-CANNING PLANTS SIGNED:

An Egyptian Industrial Mission to Japan, according to press reports, has signed contracts with the Japanese for the construction of a shrimp-freezing plant (estimated cost about US$63,000) and a sardine preservation and canning plant. The contract for the plants was signed under an Egyptian-Japanese economic agreement, the United States Embassy in Cairo reported on March 19, 1959.

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JAPANESE RESEARCH VESSEL TO STUDY TUNA RESOURCES:

The Japanese research vessel Shoyo Maru arrived at Alexandria, Egypt, during March to conduct exploratory fishing for tuna between Alexandria and Sollum (Libyan border). The project was arranged by the Egyptian Ministry of Agriculture and the Japanese Ministeries of Commerce and Industries. The Shoyo Maru was scheduled to explore for tuna between March 17-20 and later on to operate in the Red Sea, the United States

Egypt (Contd.):

Embassy in Cairo reported on March 19, 1959.

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MARKET FOR CANNED SARDINES:

A market for California sardines (pilchards) in Egypt in the near future is not promising due to the scarcity of dollar exchange. Before the exchange problem became acute, California sardines were well known and liked in Egypt.

There is at present no production of canned sardines in Egypt, although, according to reports, a sardine canning plant is to be established in Egypt with the technical assistance of the Japanese.

Canned sardines imported into Egypt are classified into two distinct groups: True sardines; and other canned fish including pilchards, mackerel, anchovy, and herring, but not including tuna and salmon. Under normal import conditions, true sardines are imported largely from Portugal. However, in recent years, because of the scarcity of Portuguese foreign exchange, imports of true sardines from Portugal have dropped considerably.

Table 1 - Egypt's Imports of True Sardines, 1957 and January-June 1958

Country of Origin	January-June 1958			1957		
	Quantity	Value		Quantity	Value	
	1,000 Lbs.	£E.1,000	US$1,000	1,000 Lbs.	£E.1,000	US$1,000
Japan	-	-	-	149	11.6	33
Portugal	4	0.3	1	123	12.6	36
Spain	247	27.8	80	200	23.2	67
Yugoslavia	142	13.7	39	86	8.3	24
Lebanon	61	8.0	23	53	6.8	20
Other	13	1.1	3	2	0.2	1
Total	467	50.9	146	613	62.7	181

Because of Egypt's policy of preserving its limited supply of dollar exchange for more essential goods, no import licenses were issued in 1957 and in 1958 for the importation of pilchards, or other canned fish, from the United States. Although Japan is a normal source of canned fish for Egypt, imports of this commodity from that country dropped to a very low figure in 1958, also because of the scarcity of foreign exchange to pay for such imports. On November 8, 1958, however, Japan and the United Arab Republic signed a new Trade and Payments Agreement, as a result of which substantial orders of canned fish (mostly mackerel) were booked for immediate shipment to Egypt.

Stocks of canned sardines at the end of 1958 were very low. However, as a result of the trade agreement with Japan, new supplies of canned mackerel began to arrive early in 1959. At present, therefore, the market seems well supplied with this commodity.

The most popular packing medium is natural, approximately 90 percent of all imports. The most popular sizes of cans are the 5-oz. tall (about 60 percent), the 15-oz. tall (about 30 percent); all others about 10 percent.

Although Japanese canners are generally able to quote better prices than their competitors in the United States, this is not the real problem of the inability of the United States firms to sell canned pilchards to Egypt at this time. The biggest marketing problem is the scarcity of dollar exchange with which to buy canned sardines from the United States.

Comparative prices prevailing for Japanese canned mackerel late in 1958 were as follows: 48 15-oz. tall, natural, US$7.10 per case, c.i.f. Port Said; and 100 5-oz. tall, natural, US$7.00 per case, c.i.f. Port Said.

Although the above were the original prices quoted by the Japanese late in 1958, a severe competition ensued later among Japanese exporters resulting in the granting of additional discounts averaging 10 percent. South African sardines were quoted as follows: 48 1-lb. tall, natural, about US$6.53 per case, c. & f. Port Said. No business was concluded because of the lack of import licenses. (United States Consulate in Cairo dispatch dated March 24, 1959.)

Table 2 - Egypt's Imports of Other Canned Fish,[1/] 1957 and Jan.-June 1958

Country of Origin	January-June 1958			1957		
	Quantity	Value		Quantity	Value	
	1,000 Lbs.	£E.1,000	US$1,000	1,000 Lbs.	£E.1,000	US$1,000
Greece	4	0.6	2	53	2.7	8
Japan	1,485	76.4	219	15,581	822.7	2,363
Portugal	1	0.1	-	22	2.3	7
Spain	55	7.7	22	76	9.4	27
Other	-	-	-	24	2.9	8
Total	1,545	84.8	243	15,756	840.0	2,413

1/Mostly mackerel, and including pilchards, anchovy, and herring but not including salmon and tuna.
Note: Values converted at rate of one Egyptian pound equals US$2.872.

El Salvador

FISHING INDUSTRY DEVELOPS SLOWLY:

Fishing is probably El Salvador's most neglected available natural resource. The present fishing fleet consists of only 16 sizable fishing boats.

El Salvador (Contd.):

Although this is four times as many as there were a year ago, the Government is avoiding issuing any additional licenses pending a proposed technical study to determine whether operation of additional boats would deplete shrimp beds.

Up to the present, the country has limited its fishing to shallow-water operations, specializing in shrimp. Lack of refrigeration in the coastal area has been a serious handicap but refrigeration installations are being established and so it may be expected that fishing as a source of cheap food and of foreign exchange will expand within the next few years. There is no indication that deep-sea fishing will be developed soon by Salvadorans. (United States Embassy in San Salvador, February 16, 1959.)

France

INSPECTION CONTROLS ESTABLISHED FOR FISHERY PRODUCTS:

The French Government recently issued an edict which imposes inspection controls on the preservation of fish and shellfish. The inspection will be carried out by the Scientific and Technical Institute of Marine Fisheries.

No shipments of preserved fishery products will be allowed without certificates of inspection. The inspections will cover the freshness of fish and shellfish and also the additives and ingredients used in the various types of processing.

Violators of the new inspection controls will be subject to punishment ranging from 10 days to three months in prison, and fines of 36,000 to 2,000,000 francs (US$734 to US$40,791). (Boletin de Informacion, Sindicato Nacional de la Pesca, Madrid, Spain, January 1959.)

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SARDINE FISHERY AND PROSPECTS FOR EXPANSION:

The French Government's bureau for maritime fish research, "L'Institut Scientifique et Technique des Peches Maritimes," has announced that one of its laboratory ships has reported the presence along the French Mediterranean coast of much larger schools of sardines than had previously been thought to exist there.

French trade sources indicate that further expansion of production in the Mediterranean, even in the presence of greatly increased resources of sardines, is severely limited by several factors. First, there is a shortage of canning facilities (in 1957, about three-quarters of the catch was consumed as fresh fish). Second, there is insufficient equipment, including a paucity of refrigerator ships, to handle large catches. Third, it is unlikely that a greatly increased catch could be disposed of profitably.

France's Sardine Landings
(both Atlantic and Mediterranean Ports), 1955-58

	1958 1/	1957	1956	1955
	(Metric Tons)			
Atlantic ports	21,300	10,700	40,700	16,400
Mediterranean ports	3,500	3,800	2,600	2,400
Total	24,800	14,500	43,300	18,800

1/ Estimated.

One of the elements in several French bilateral trade agreements, notably with Morocco, has traditionally been an engagement to import sardines, in return for which the other country agrees to import some product which would probably otherwise have a difficult time entering that market. The lower price offered for sardines by other countries also has its effect on their inclusion in bilateral treaties. In addition, it is not unusual for fishing boats to limit their catch, since the presence on the market of larger quantities might have a depressing effect.

For the above reasons, trade sources do not believe that the French fishing industry will in the foreseeable future supply a much greater percentage than at present of the 40,000 metric tons of sardines consumed annually in France. (United States Embassy, Paris, report of March 11, 1959.)

French West Africa

DAKAR'S TUNA FISHING INDUSTRY PROSPECTS UNFAVORABLE FOR SUMMER SEASON:

In France there have been discussions on whether or not owners of vessels based in France fishing for "white" tuna should be allowed to participate in tuna fishing off Dakar.

France's Comite du Thon (Tuna Committee) does not oppose letting the tuna vessels fish off Dakar if two problems can first be solved. The problems are (1) the prices that canners would be willing to pay for tuna in Dakar or French mainland ports and (2) how much tuna the canners could absorb in Dakar and the French mainland.

The price problem results because the final retail price of canned tuna must not exceed 160 francs (38 U.S. cents) for a 212-gram (7.5-oz.) can. Dakar's canneries have a capacity for approximately 5,000 metric tons of tuna for canning and subsequent shipment to the French main-

French West Africa (Contd.):

land. In order to sell at the prescribed retail price, the canners cannot pay the fishermen for tuna more than 40-50 francs per kilogram (4.5-5.5 cents a pound). Also, the canned tuna produced to sell at the stipulated retail price will still be more expensive than the canned tuna offered by the competitive products from Japan and Peru.

It is thought that only 2,000-3,000 tons of tuna caught off Dakar during the 1959 fishing season can be absorbed by French mainland canneries. This is a reduction in demand caused by a large 1958 production of canned tuna by French mainland canneries, which used some 13,000 tons of "white" tuna in the summer of 1958.

Decisions will soon be made on whether French tuna fishing vessels will be allowed to fish off Dakar. Regardless of the decisions made, and despite the fact that Japan has raised its prices of canned tuna, Dakar's tuna industry prospects for the 1959 season do not look favorable. (Industria Conservera, November 1958.)

German Federal Republic

FISHING INDUSTRY AND EUROPEAN ECONOMIC INTEGRATION:

At the invitation of the Bremerhaven Chamber of Commerce and Industry, the West German Undersecretary of the Ministry of Agriculture spoke on March 9, 1959, about European economic integration and the position of the fishing trade.

In his remarks to the fishing industry, the Undersecretary pointed out the multitude of problems prevailing at present in the West German fishing trade, resulting primarily from the necessity of fishing in distant waters, and the obsolete fish marketing system in West Germany. The speaker stated that essentially the fishing trade should solve its own problems rather than look for government support. In this connection, he suggested (1) the development of new types of factoryships and closer cooperation among the fishing companies to ensure not only a more uniform fish supply to the West German market, but also more stable prices; (2) a reform of the present marketing system to speed up the handling of fish and to achieve an improvement of the quality of fish and fish products; and (3) the expansion of deep-freezing facilities. The Undersecretary agreed that in some phases of such a wide-flung development program, limited government support might be inevitable to insure speedy results.

He also stated that the position of the West German fishing trade within the European Economic Community is a strong one. However, he said, the German fish trade will include some formidable competitors, such as England, Norway, and Iceland, which have an export surplus of fish that equals about the entire West German fish production. While there is still time, the West German fishing trade should prepare itself for such keen international competition. However, it will be essential for the West German Government, the speaker said, to avoid proceeding rashly in seeking to bring about such international competition. Bilateral agreements may provide a means of adjusting West German fish imports to its own production. (United States Consul dispatch from Bremen, dated March 16, 1959.)

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MARKET FOR CANNED SARDINES:

In West Germany, canned California sardines (pilchards) are classified separately from other sardines. Although under existing legislation, pilchards may be sold as sardines, fish traders in West Germany prefer to market them as "California Pilchards." They believe that these large sardines do not meet the German consumer's specifications for a sardine, and are anxious not to upset the carefully-cultivated brisling or sild-type sardine market in West Germany.

California sardines were first marketed in Germany after World War I. In subsequent years, a modest market was created for this product. However, through the introduction of foreign-exchange controls by the Third Reich, imports of California sardines were discontinued in 1934. As a result of the liberalization of sardine imports by West Germany in 1956, California sardines have reappeared on the German market.

As California sardines are not considered comparable with the sardine products imported from Portugal, French Morocco, and Yugoslavia, there is practically no competition from other imports. However, California pilchards must compete with the abundant domestic supply of canned filleted herring offered in a large variety of packs, including tomato sauce. The German products are offered at prices which are substantially below those quoted for approximately comparable packs of California sardines; an oval can of German-packed filleted herring in tomato sauce, containing 270 grams (about 9-1/2 ozs.) of fish, is sold at a wholesale price of DM 0.60 to 0.68 (about 14.4-16.3 U. S. cents) per can, and a can containing 200 grams (about 7 ozs.)

German Federal Republic (Contd.):

of filleted herring sells for DM 0.47 to 0.55 (about 11.3-13.2 U. S. cents). An 8-ounce (about 227 grams) oblong can of California sardines packed in tomato sauce would sell for approximately DM 0.80 (about 19.2 U. S. cents) wholesale.

In spite of the higher cost, there appears to be a limited market for California sardines in West Germany, but only as a delicatessen item. Import trade sources stated that German fish dealers prefer one particular American brand of canned California sardines. They claim that this brand accounts for well over 90 percent of California sardines at present on the West German market. Although repeated attempts have been made to sell other American brands, this has been found extremely difficult because of the unreceptive attitude of wholesalers and retailers.

West German canned fish importers state they have met with considerable difficulties in developing even a modest market for canned California sardines in the past few years. The first postwar deliveries in 1956 amounted to some 900 cases of 15-ounce cans of sardines, which were sold with considerable effort. In the following year no deliveries of California pilchards were made, allegedly because of greatly reduced catches. In spite of this interruption in the supply, West German importers in the fall of 1958 bought 500 cases of California sardines packed in 15-ounce cans at $9.50 per case, c.i.f. Hamburg, and 350 cases of 8-ounce cans at a price of $7.30 per case, c.i.f. Hamburg. These imports are selling slowly. The larger part of the shipment containing the 8-ounce cans is still unsold. In the meantime, the prices for these two types of packs have dropped to $8.50 and $7.10 c.i.f. Hamburg, respectively, much to the annoyance of the importers who had stocks on hand. Importers have not been able to expand the market even at the reduced prices.

At present, South African or Japanese sardines are not sold on the West German market because the quality of some trial shipments received in 1957 and 1958 was not satisfactory.

West German Imports of Canned Sardines 1/ 1957-1958

Country of Origin	Jan.-Nov. 1958			Jan.-Nov. 1957		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 DM	US$ 1,000	Metric Tons	1,000 DM	US$ 1,000
Portugal	9,086.5	19,700	4,717	7,937.9	19,520	4,674
French Morocco	4,605.7	9,297	2,226	3,504.7	7,788	1,865
Yugoslavia	1,473.0	2,524	604	244.4	489	117
United States	-	-	-	28.2	45	11
South African Union	-	-	-	17.3	19	5
Other countries (not specified)	27.0	51	12	6.7	13	3
Total	15,192.2	31,572	7,559	11,739.2	27,874	6,675

1/West German statistics do not differentiate between "Sardines" and "Pilchards."

West German importers stated unanimously that given a steady supply and more or less stable prices, it might be possible to develop a market in West Germany for about 1,500 to 2,000 cases of 48 15-ounce cans per year of California sardines packed in tomato sauce. In their opinion, the price per case should not be much higher than $7.60 to $7.80 c.i.f. Hamburg. This would enable the West German fish trade to sell the imported product at a retail price of about DM 1.50-DM 1.60 (35.9-38.3 U.S. cents) a can and thus compete with domestically-packed herring fillets. (United States Consul dispatch from Bremen dated March 20, 1959.)

Greece

LOBSTER FISHERIES:

There are three types of lobster genera found in Greek waters--Homarus vulgaris (two-claw Maine type), Astacus sp. (fresh-water crayfish), and Palinurus vulgaris (spiny lobster).

The spiny lobster is found in all Aegean and Ionian Sea waters and is caught with both pots and nets. The lobster pots, baited with mackerel or octopus, are used for night fishing in calm waters. Nets are used with a mesh size of about 110 mm. (about 4.3 inches) and are set out early in the morning and lifted about four hours later and reset again and hauled back before the end of the day. At the Island of Corfu long lines are used as well as pots, both of which are baited with fish. At a number of fishing ports, the spiny lobsters are maintained alive in natural holding pounds and are fed with small fish and sea urchins (Alieia, March 1959).

Indonesia

JAPANESE TO AID IN ESTABLISHING A FISHING AND CANNING INDUSTRY IN WEST SUMATRA:

Two Japanese fishing experts during March 1959 were making a survey of the Padang region of West Sumatra with an objective of establishing a sea fishing and canning industry in that area. The industry is to be financed by Japanese reparations and is sponsored by the Indonesian Ministry of Veterans Affairs, which sent the technicians to make the survey. Basic equipment and supplies will include a 30-40 ton vessel with a 100 hp. engine, three 70 ton vessels of 200 hp., an ice plant with a daily capacity of ten tons, two freezing rooms, a cannery with a capacity of 200 cases of canned fish a day, and a fish meal factory.

One of the Japanese technicians said the reason for establishing the industry in the Padang area was that West Sumatra suffers an acute shortage of fish, with prices twice as high as in Djakarta (United States Embassy in Djakarta, March 25, 1959).

Italy

CANNED FISH PRICE TRENDS:

Acute competition prevails within Italy's canned fish trade. Portuguese canned sardine prices have been lowered continually to meet Moroccan competition. Canned tuna from Japan is expected to sell at prices higher than the Italian product which is priced at 550 to 580 liras per kilo (40-42 U.S. cents a pound).

Italy's demand for canned fish centers mostly on "extra" quality merchandise. Spanish canned tuna sells for 790 liras per kilo (58 cents a pound) in Italy. The best quality canned anchovy is very high-priced in Italy due to a shortage of stocks. Italian stocks of canned cod have diminished considerably. (Boletin de Informacion, Sindicato Nacional de la Pesca, Madrid, Spain, January 1959.)

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PURCHASES OF JAPANESE-CAUGHT TUNA:

In Italian fishing circles there is concern about Japanese vessels that have been fishing for tuna off the Canary Islands and selling it in Italian ports for prices below those asked by Sicilian tuna fishermen.

Since it has become more difficult for the Japanese to sell tuna to the United States, the Japanese have arranged to sell tuna to Italy by means of compensating tuna for rice. The Japanese sold about 10,000 metric tons of tuna to Italy in 1957, and considerably more in 1958. The tuna sold to Italy comes from Japanese fishing operations in equatorial waters of the Atlantic. (Industria Conservera, November 1958.)

Japan

ATOMIC-POWERED FISHING VESSEL PLANNED:

Plans for building the first atomic-powered fishing vessel for experimental purposes were announced at the second World Fishing Boat Congress, Food and Agriculture Organization Headquarters, Rome, by Professor Atsushi Takagi of the Department of Naval Architecture of the University of Tokyo.

The vessel will have a displacement of 3,000-4,000 tons and will be powered with an American-type reactor. It will have a complement of 100, of which 50 would be sailors and 50 research experimenters. Of the research crew, 20 will act as observers and 30 will be responsible for handling the reactor.

The reactor will be installed in a container and will use as fuel 29-percent condensed dioxidized uranium. For emergency use, a 120 hp. Diesel will be installed so that the boat can be navigated should the reactor be put out of use.

Professor Takagi said that this was "our trial design which we hope will be as economical as possible, but it is up to the Japanese Government whether or not we shall get the necessary appropriation to construct the vessel. It is a very expensive project even for our proposal which is on a modest scale."

Professor Takagi went on to say that he believed that high-speed fishing boats driven by reactors will be coming into general use before 1970 and that the atomic energy in them would be used directly as power rather than through the use of boilers.

"We can compare this transition with the change that took place when steam engines were replaced by Diesel engines," he continued. "If the new atomic plant is compact and of light weight, it will certainly be used in fishing boats. We can also imagine that such an atomic plant would enable us to build subsurface fishing boats as the power required to drive them would not consume oxygen. Furthermore, the development of electronics will be the means of introducing superior automatic control systems and with such boats will be able to trawl any depth in the sea, and submerge to the calm bottom in rough weather."

Earlier in his address Professor Takagi referred to the formation of the first atomic-powered industrial group in Japan which has been conducting research on a trial design of the smallest unit reactor for use in smaller vessels. The use of such reactors in experimental vessels would help to develop the technology involved in propelling boats by atomic energy.

The American-type reactor (PWR), which the Japanese propose to use, has been selected because "it has already proven its value in vessels."

The reactor will be used to drive a 2-step reduction steam turbine developing 8,000 ship hp. at 200 revolutions per minute. The total weight of the reactor and its screen would be about 1,100 tons, of which 795 tons would be the weight of the shield.

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CANNED FISHERY PRODUCTS EXPORTS, 1958:

Japanese exports of canned fishery products in 1958 totaled 9,197,450 actual cases as compared to 7,459,632 cases in 1957. This means that 73.4 percent of all canned food exports in 1958 were fishery products while the balance consisted of agricultural and meat items. Total canned food exports in 1958 totaled 12,521,944 actual cases, 18 percent

Table 1 - Japanese Exports of Canned Fishery Products, 1957-58

Product	1958	1957
	.....(Actual Cases).....	
Crab meat	621,278	601,343
Tuna in oil	1,299,145	1,547,924
Tuna in brine	2,031,584	1,744,260
Tuna, other	174,536	33,287
Total tuna	3,505,265	3,325,471
Sardine	669,492	789,973
Salmon	2,786,588	1,540,211
Other fish	288,857	309,845
Shellfish	339,333	222,842
Other fishery items	986,637	669,947
Total all fishery items	9,197,450	7,459,632

Japan (Contd.):

more than in 1957. The Japan Canned Food Exporters Association says that 1958 canned food exports set a new all-time record, and the value of those exports in 1958 was up 40 percent, chiefly because a large amount of high-priced salmon was exported.

Canned tuna in oil was the only important fishery product which showed a drop in exports in 1958 as compared with 1957. The biggest increase was in canned salmon, exports of which in 1958 were 1,246,377 actual cases more than in 1957. Exports of canned tuna in brine, canned saury, and canned shellfish also increased substantially in 1958.

Prior to 1958 the United States was the principal buyer of Japanese canned foods, but in 1958, because of Britain's relaxation of import restrictions on canned salmon, Mandarin oranges, and other items, the United Kingdom became Japan's best canned foods customer. The United States was second followed by the Philippines and West Germany.

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CANNED WHITE MEAT TUNA IN BRINE PRICE CUT PROPOSED:

A price cut on white meat tuna canned in brine sold to the United States was discussed on April 3, 1959, at a joint sales committee meeting of the Japan Canned Food Exporters Association in Japan. The problem of the next "sale-out" was also discussed.

New York importers of Japanese canned tuna have been asking for a $1.00 per case cut on canned white meat tuna in brine in order to promote the sale of that product. But the Japanese packers have been talking of a cut of 50 cents a case because the ex-vessel price for the fish is high. The decision was scheduled to be made about mid-April.

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DROP IN RAINBOW TROUT EXPORTS TO UNITED STATES CAUSES CONCERN:

The recent substantial drop in Japanese exports of frozen rainbow trout to the United States is causing concern among exporters of that product in Japan. The export price has dropped by about 13 cents a pound from the 49 cents a pound c.i.f. prevailing in the summer of 1958. For the first three months this year only about 150 metric tons have been shipped to the United States. In all of 1957 a total of 1,200 tons were shipped to the United States, but in 1958 exports dropped to 900 tons.

The Japanese contend that the drop in sales to the United States is due to the improved sales methods and incentives by Danish exporters of rainbow trout. Because of this, the Japanese are considering the need of setting up a sales system, agreeing on export prices, or establishing an export quota for rainbow trout.

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EXPORTS OF FROZEN TUNA TO EUROPE EXPANDING:

A direct export of frozen tuna to Yugoslavia was reported in March by a Japanese fishery company. The same company, according to reports, has also concluded a similar contract with a buyer in Greece. In addition, two other Japanese firms are accepting offers from Turkey. A sample of frozen tuna early this year was shipped to West Germany and the Netherlands.

The price of these offers to Europe is $280-290 a metric ton c.i.f. the European country. The Japanese are enthusiastic about this new outlet for frozen tuna, and it is considered a blessing to Japanese Atlantic tuna clippers because their landings in Italy have been restricted to only two times a year on the basis of the latest agreement.

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KING CRAB PRODUCTION PROSPECTS, 1959:

The Japanese 5,000-ton king crab factoryship Tokei Maru, sailed from Hakodate, Japan, on April 1 for her annual trip to the fishing grounds off the north shore of the Alaska Peninsula. The Tokei Maru is the only Japanese king crab factoryship operating in the Bristol Bay area. As in the past, the factoryship (operated jointly by three large Japanese fishing companies) will employ two 108-ton fishing vessels and 8 Kawasaki boats, and will be fishing until about July 15, 1959.

In their license application, submitted on March 24, 1959, the operating companies asked for an increase in the quota from the 57,000-case limit of the past two years to 70,000 cases. Since the permitted five-percent allowance for error has resulted in a pack of 59,850 cases in each of the past two years, it is expected that the pack this year will be about 73,500 cases. As reasons justifying their request

Japan (Contd.):

for an increase, the companies cited last year's satisfactory catch rate of about 11 crabs per shackle of net, the good recovery rate of 18.9 crabs per case, and the fleet's ability to attain its catch goal well within the scheduled time. The Japanese Fisheries Agency, in granting the request, agreed that the Bristol Bay king crab resource appears to be in a healthy condition. The Agency further noted that, since last year, American crab trawlers, who had been fishing the same grounds as the Japanese shifted their efforts to new grounds south of the Aleutians, thus removing some fishing pressure from the resource exploited by the Tokei Maru. The Agency emphasized that the new pack quota limit has been granted for one year only and that the effect on the king crab population will be studied carefully before any decision is made to continue fishing at the new high level.

In the other Japanese king crab factoryship fishery, that of the Sea of Okhotsk, prospects are less bright. On March 31, in the first session of the Japan-Soviet Fisheries Commission to deal with king crab, the Soviet delegation proposed that the Japanese catch be cut to 200,000 cases from last year's 320,000 cases, at the same time offering to reduce their own production from 340,000 to 300,000 cases. The Soviets also proposed allocation of definite fishing areas to the fleets of each country, shortening of the fishing period, cutting down the amounts of net set, and shortening the length of time that nets can be left in the water. The Japanese delegation, while admitting that the king crab population of the Sea of Okhotsk shows signs of a decline, rejected the Soviet proposals as unnecessarily severe and unwarranted by conservation considerations. The press quoted industry sources as saying that the proposed allocation of fishing grounds gave all of the good grounds to the Soviet fleets.

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PROBLEMS ARISE IN INTERNATIONAL FISHERIES:

King crab: During the second week of April the Japanese-Soviet Northwest Pacific Fisheries Commission came to agreement on king crab catch quotas and fishing restrictions for the grounds west of Kamchatka in the 1959 season. The Japanese industry was forced to accept a cut of more than 10 percent in its production quota to 280,000 cases as compared with 320,000 cases last year, but it will be able to continue operating four fleets as in past years. Although Japanese king crab fishermen have gained a 20-percent increase in their catch quota for the eastern Bering Sea this year, they seem to be facing serious trouble elsewhere. Land-based vessels from Hokkaido, which recently opened their regular seasonal fishing off the Maritime Province, were reported to have found crabs abundant and to be making fine catches. The Japanese fisheries press has carried reports that four Soviet fleets of fast vessels have appeared on the same grounds and are systematically raiding and sabotaging the Japanese nets. Two of the Japanese companies report more than 8,000 units of crab not damaged or lost already, and it is being predicted that the Japanese fishermen may have to abandon the grounds until the Russians leave.

Salmon: In negotiations on the Northwest Pacific salmon mothership fishery, the Soviets have raised their catch quota offer from 50,000 to 70,000 metric tons (the 1958 Japanese quota was 120,000 tons) and have modified their demands for establishment of new areas closed to fishing. They are still insisting, however, on a large closed area east of the northern Kuriles to allow salmon to migrate from the Pacific into the Sea of Okhotsk, and the Japanese seem to be faced with a choice of accepting new area restrictions, which might prove to be permanent, or resigning themselves to a drastic cut in their catch quota. A Japanese newspaper on April 16 stated that the three largest mothership operating companies are planning to withdraw one fleet each from service this year, cutting the Japanese high-seas salmon fishing fleets from 16 to 13.

Tuna: One consequence of the increasingly slim future in prospect for the Japanese mothership salmon fishery has been a determined movement by salmon boat operators to get government approval to engage in mothership-type tuna fishing. Beginning in Hokkaido about a month ago, this movement has met strong opposition from tuna boat owners, who fear overproduction of tuna. In its statement of tuna mothership fishery licensing policies for 1959, announced on April 8, the Japanese Fisheries Agency approved for the first time participation in mothership fleets by vessels primarily licensed for other fisheries. It was made clear at the same time, however, that there would be no increase in the over-all catch limit of 13,600 tons for the mothership tuna fishery.

Pearl Shell: A cutback is also in prospect for the pearl-shell fishery of the Arafura Sea off Australia, a relatively small-scale operation but one which is of local importance to the port of Kushimoto in Wakayama Prefecture. The Australian Government is reportedly asking that the Japanese catch be cut to 375 tons from last year's 470 tons. The matter was discussed at Tokyo in March between the Foreign Ministers of Japan and Australia, and the Australian position is said to have been very firm. It is estimated that the catch limit proposed by Australia will mean a reduction of the Japanese pearling fleet from 15 to 12 or fewer boats, the United States Embassy in Tokyo reported on April 17, 1959.

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TARGETS FOR 1959 FISHERY PRODUCTS EXPORTS REVISED:

On March 31, 1959, the Japanese Agricultural and Fisheries Products Export Committee of the Ministry of International Trade and Industry set export goals for the 1959 export year of US$117,348,000 worth of canned fishery products and $60,612,000 worth of other fishery products (exclusive of fats and oils). The total, $177,960,000, is about 10 percent above the 1958 goal, but is little, if any,

Japan (Contd.):

above last year's actual exports, as indicated by preliminary estimates. These estimates were revised upward from preliminary estimates.

The following figures are the targets for major canned fish products exports in 1959: canned tuna, 3,445,000 cases ($27,757,000); salmon, 2,210,000 cases ($55,250,000); crab, 555,000 cases ($11,460,000), sardines and saury, 1,845,000 cases ($11,849,000). For other important fishery exports, these goals have been set: frozen tuna, 118,300 tons ($27,776,000); frozen swordfish, 5,000 tons ($3,500,000); cultured pearls, 74,430 pounds ($20,250,000); agar-agar, 1,500,000 pounds ($1,800,000); salted and dried fishery products, 17,000 tons ($7,286,000).

Somewhat more detailed figures on the canned goods categories were published about a week before the committee meetings. It is interesting to note that almost all categories were revised upward during the meetings. The preliminary figures were: 2,206,000 cases of tuna in brine and 1,100,000 cases of tuna in oil; 2,100,000 cases of salmon; 500,000 cases of crab; 900,000 cases of sardines; and 1,000,000 cases of saury.

The Committee made a number of interesting recommendations, among them the formation of a joint Government-industry headquarters for fighting import restrictions against frozen products; inclusion of sardines and saury in reparations for the Philippines, Indonesia, and Burma; increased Government efforts to secure larger import quotas for canned fish in Southeast Asian and Middle Eastern countries; increased canned salmon and crab quotas in the new Japan-France trade agreement; efforts to get the United States canned tuna "global quota" allotted among exporting countries on the basis of past records; and simplification of procedures for sending money abroad needed to pay expenses of fighting import restrictions and tariff increases. (United States Embassy dispatch from Tokyo, dated April 9, 1959.)

Note: Also see Commercial Fisheries Review, May 1959, p. 64.

Korea

FISHERY PRODUCTS EXPORT PROGRAM FOR 1959:

The Korean Fishery Bureau of the Office of Marine Affairs has announced its target for the export of fishery products in 1959 as 14,500 metric tons (26 different categories) valued at US$7.5 million, more than double the 1958 export value. Dried cuttlefish (4,200 tons--$1.5 million), agar-agar (500 tons--$1.5 million), fresh and live fish (4,000 tons--$960,000), laver or edible seaweed (200 tons--$800,000), and canned fish (823 tons--$722,000) account for 72 percent of the exports programmed. Increasing exports (from 5,065 tons in 1955 to 11,048 tons in 1958) of seafood in recent years have constituted a bright spot in the generally unsuccessful efforts of Korea to better its balance of trade.

A Korean mackerel seiner equipped with a power block for hauling in the huge net.

Financing has been one of the key difficulties in expanding the potential of Korean fishery production and exports. A leading frozen shrimp processing firm, with modern facilities, is ready to export to the United States market if requisite loans to finance initial exports can be obtained, the United States Embassy in Seoul reported on March 27, 1959.

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FISHING INDUSTRY EXPANDS WITH HELP OF FOREIGN AID:

The U. S. Office of Economic Cooperation (OEC) fisheries program, carried out jointly with the Korean Bureau of Marine Affairs, benefits almost exclusively individual fishermen and their guild associa-

Korea (Contd.):

tions. Among the many activities which serve to strengthen the Korean fisheries industry are the construction of 359 boats up to 80 tons in size (most of them in private shipyards in Korea), establishment, from counterpart funds, of a Fisheries Revolving Fund to supply short-term operating capital to fishery activities; construction of modern buildings for storage and equipment; improvement of methods of processing of fishery products (including exports); and instruction in the use of new types of fishing gear. With these and other activities, the OEC has helped the Korean fishing industry to expand rapidly.

The annual landings of fish and other seafood by Republic of Korea fishing vessels were about 500,000 metric tons in 1958, as compared to only 250,000 tons in 1954. During 1958, the fishing industry exported US$2.2 million worth of products out of a total of $16.3 million of exports.

Mexico

ENSENADA AREA PRODUCTION OF FISHERY PRODUCTS, 1957-58:

Landings of finfish in the Ensenada area (Baja California) of Mexico were up about 82.3 percent due to sharply higher landings of sardines (pilchards) and a fourfold increase in the landings of tuna. Landings of shellfish dropped slightly (about 4.1 percent). Production of processed or manufactured fishery products was down about 41.8 percent due to much lower production of seaweed or kelp (down 49.0 percent). The production of fishery products in 1958 reflects the situation prevailing in Southern California--more plentiful supplies of sardines and the increasing shortage of available beds of marine algae.

Mexico's Ensenada Area Production of Fish, Shellfish, and Other Marine Products, 1957-58

Products	Quantity	
	1958	1957
	(1,000 Lbs.)	
Finfish Landings:		
Sardines	32,594	17,924
Tuna	4,768	890
Pacific mackerel	785	2,339
Jack mackerel	662	11
Rock cod	145	131
Barracuda	58	30
Bonito	37	-
Pollock	33	88
Other	38	49
Total	39,120	21,462
Shellfish Landings:		
Abalone	5,154	5,734
Spiny lobster	2,140	2,207
Shrimp	702	-
Clams	292	507
Turtles	235	436
Other	5	10
Total	8,528	8,894
Production of Other Marine Products:		
Marine algae	11,329	22,198
Fish meal	3,025	2,380
Fish oil	300	375
Fertilizer	65	402
Abalone shell	115	131
Other	2	20
Total	14,836	25,506

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WEST COAST SHRIMP FISHERY TRENDS, MARCH 1959:

The shrimp fishery off the Mexican west coast of Sinaloa and Sonora experienced a steady decline in catches during the first quarter of 1959. Catches at Mazatlan, for example, amounted to only 244 tons in February as compared with 900 tons in November of 1958. A similar drop was experienced during the first quarter of 1958 and the industry is at loss to explain this seasonal decline. Some hope has been expressed that the Federal Government announced change of the "closed season" from March 25-May 15 to July 15-September 15 might result in both increased catches and larger shrimp (United States Consul in Nogales reported on March 31, 1959).

Morocco

FISHING OF SPINY LOBSTERS BY VESSELS OVER 20 TONS PROHIBITED:

A two-year prohibition against the capture of spiny lobsters and related species in Moroccan territorial waters by vessels over 20 tons was announced by the Government on February 28, 1959. The regulations were effective on March 10, 1959.

The regulations restricting the spiny lobster fishing to small vessels was adopted as a conservation measure. The small size of the spiny lobsters taken in Morocco's territorial waters indicates overfishing.

In October 1958 rules and regulations were established for inland waters, pertaining to fishing preserves, sport and commercial licenses, species of fish that can be legally caught, legal lengths, and daily catch quotas.

The new regulations are the first major revision of Morocco's fishing laws

Morocco (Contd.):

and regulations since 1922. (The United States Consul dispatch dated March 20, 1959, from Casablanca.)

Netherlands

BUILDING 32 STEEL FISHING VESSELS FOR DENMARK:

A Netherlands shipbuilding company of Monnikendam, near Amsterdam, with the assistance of several small shipbuilding firms, has received an order for 32 steel vessels for delivery to Denmark. The cutters will be about 82 feet long, of 90-95 tons, and powered with 260-300 horsepower engines. The cutters will be used in the Danish fishing industry which is presently changing over from wooden fishing vessels to steel vessels. (United States Consul dispatch from Amsterdam, dated March 20, 1959.)

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NEW FACTORYSHIP TRAWLER:

The new 572-ton factoryship trawler, the Rotterdam, will join the Netherlands fishing fleet in July 1959. This will be the first vessel of this type to fly the Dutch flag. The vessel will have a capacity of 5,000 crates of fish, 980 of which can be stored in the cold-storage hold and 4,020 in the cooler-hold. In addition, the vessel will be able to carry 56 metric tons of fish oil and 60 tons of fish meal. The Rotterdam will be able to stay at sea for 35 days. (United States Consul dispatch from Amsterdam, dated February 19, 1959.)

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NORWAY'S OFFER FOR WHALING FACTORYSHIP UNACCEPTABLE:

The President of the Netherlands Whaling Company has termed the Norwegian offer of fl. 30 million (about US$7.9 million) for the factoryship Willem Barendsz unacceptable. The Norwegian offer, he said, did not include purchase of the whale catchers and the tanker Bloemendael which also belong to the company. The replacement cost of the Barendsz today is about fl. 42 million (US$11.1 million). Moreover the Bloemendael, under the Norwegian terms, could not be used for whaling again and the whole offer was too doubtful since it was based on Norwegian take-over of the Dutch blue-whale quota under the International Whaling Agreement. (The United States Consul dispatch from The Hague, dated March 20, 1959.)

New Hebrides

TUNA INDUSTRY AIDS ECONOMY:

The only significant economic advance made during 1958 in the New Hebrides was the opening of a fish cannery at Santos. Frozen tuna valued at £St.382,156 (about US$964,000) accounted for the major portion of the increase of exports from the Condominium in 1958. The cannery, in operation most of the year, proved to be an excellent source of overseas earnings for the Territory and is one of the few important and successful industrial or commercial developments in the South Pacific area in recent years.

In 1958 the New Hebrides exported 3,509 metric tons of frozen fish (valued at US$964,000) and imported 210 tons of canned fish valued at about US$69,400, the United States Consul at Suva, Fiji, reported on March 11, 1959.

Nicaragua

SHRIMP FISHERY TRENDS, DECEMBER 1958:

By the end of December 1958, eight companies had applied to the Nicaraguan Office of Natural Resources of the Ministry of Economy for fishing exploitation licenses. Previously fishing was done under exploration licenses that expired December 31. Six of the applying companies are American; one is incorporated in Panama, but believed to be American capital; and the eighth is incorporated in Nicaragua, but believed to be French capital. The Nicaraguan corporation also has applied for a license to grow oysters in Laguna de Perlas north of Bluefields.

Nicaragua (Contd.):

Shrimp exports during the last quarter of 1958 amounted to 314,000 pounds, valued at $162,700. As many as 80 boats were fishing at one time, according to a February 13, 1959, dispatch from the United States Embassy in Managua.

Norway

DISPUTE OVER ENDING SUBSIDY ON FISH FOR FILLETING AND FREEZING CONTINUES:

The dispute between the fish freezing and filleting industry and the North Norway Fishermen's Marketing Association (Norges Raafisklag) over the discontinuance by the Association of the subsidy on fish sold to the frozen fish industry has assumed wider proportions and, according to the industry, has affected the sales prospects of Norwegian frozen fillets in foreign markets. The Chairman of the Board of the Bank of Norway, and also Chairman of the Commission which recently investigated the profitability of the fisheries, has now entered the dispute.

According to a press account of an address he made in Trondheim on April 15, 1959, he spoke critically of the Association's action, describing it as discriminatory and shortsighted. He intimated that there are many who question whether the organization should continue to have the right to establish the prices fishermen shall receive for their catches. He conceded that the freezing and filleting industry, because of its higher quality requirements, should pay a somewhat higher price than the drying and salting sector, but argued that the price should take into account changes in the volume of fish supplies and in the market conditions for frozen fish fillets. He also stated that the fishermen should, in the long run, be able to operate profitably without Government price supports, but that, for the time being, such support is absolutely necessary, according to an April 17, 1959, dispatch from the United States Embassy in Oslo.

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FISH CONSUMPTION UP IN 1958:

Norwegians consumed 130,000 metric tons of fish in 1958, an average of about 82 pounds a person, according to a Norwegian Government press release, an increase of 3 percent over 1957.

Norway exported 525,000 tons of fish and fish products in 1958, about 14 percent less than in 1957.

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FISHERMEN SEEK ASSISTANCE FROM THE GOVERNMENT:

Representatives of the Norwegian fishermen's organizations and the fishing industry have met with officials of the Ministry of Fisheries to seek assistance from the Government for the fishermen who are in economic difficulties as a result of the poor herring and cod catches during the 1959 winter fishery season.

Following the meeting, the Government announced that it would ask the Storting to increase the subsidy to the cod fishermen by 2 million kroner (US$280,000) to 34 million kroner (US$4,760,000) in 1959. The funds will be used to support minimum prices and to subsidize part of the cost of fishing equipment and bait.

The Government also announced that it will in the course of the year submit proposals to the Storting based on the recommendations of the Brofoss Report for increasing the profitability of the fisheries. The president of Norges Raafisklag, the Norwegian fishermen's association, reportedly has expressed his satisfaction with the Government's decision to increase the subsidies and has called off the fishermen's strike which he had threatened would take place in April, the United States Embassy in Oslo reported on April 4, 1959.

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MOST OF 1958/59 WHALE OIL PRODUCTION SOLD:

According to press reports from Sandefjord, Norway, the Norwegian whaling companies have contracted for the sale of 91,500 long tons of whale oil from the 1958/59 season's production to United Kingdom and Norwegian processors at £72 10s. (about US$204.36) per long ton.

Norway (Contd.):

Some 9,500 long tons of whale oil from this season's production had been sold earlier from £74-75 (about $208-211) per long ton.

Thus, nearly all the anticipated production of the Norwegian Antarctic expeditions during the current whaling season has been sold. Last season's Norwegian production was sold at an average of £72 (about $203) per long ton, a decrease of £13 (about $36.50) compared to the average price obtained during the two previous seasons. A large portion of the 1957/58 season's production remained unsold until the middle of 1958.

A Sandefjord newspaper which reflects the views of the Norwegian whaling industry, stated that the prices obtained this year must be considered satisfactory in view of the state of the market for whale oil, the United States Embassy in Oslo reported on March 6, 1959.

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SUBSIDY ON FISH FOR FREEZING AND FILLETING TO BE ENDED:

The Norwegian Fishermen's Association has decided that it will discontinue its subsidy on sales of raw fish to the fish freezing and filleting industry. As a result the industry is faced with the prospect of paying higher prices to the fishermen in order to obtain supplies of fresh fish and the need to increase the price of its products.

The industry is very concerned over this development, which it fears would seriously affect the ability of Norwegian frozen fish fillets to compete in foreign markets, and is protesting vigorously against it. If the protest is unsuccessful and the parties are unable to reach agreement, the Government may be forced to intervene in order to settle the dispute, according to a March dispatch from the United States Embassy in Oslo.

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VALUE OF FISHERY PRODUCTS EXPORTS TO UNITED STATES HIGHER IN 1958:

Exports of fish and fish products (includes frozen fish fillets but excludes fish meal) by Norway to the United States in 1958 increased in value from about 75.1 million kroner (US$10.5 million) in 1957 to almost 90.0 million kroner ($11.3 million) in 1958, an increase of 7.8 percent. During the same period exports of fish meal and kelp decreased about 77 percent, from 3.7 million kroner ($515,000) to 0.8 million kroner ($119,000).

The increase in value of exports to the United States of fish and fish products was due primarily to greater sales of frozen fish fillets. Fish fillet exports, which were valued at 6.6 million kroner (about $924,000) in 1957, rose to 14 million kroner (about $1,961,000) in 1958. Trade sources report that the prospects are excellent for increased sales of fillets on the American market, provided that sufficient fish is available. Poor catches in recent years have resulted in raw material shortages at the freezing plants. Canned fish, primarily sardines and kippers, represent the bulk of Norwegian fish exports to the United States, and were valued at 50.6 million kroner (US$7,087,000) in 1958, slightly below the previous year. Norwegian fish canners are not optimistic over 1959 prospects. Poor catches and rising costs have caused concern over the competitive position of that industry. Norwegian canneries will be pleased if the 1958 level of canned fish exports to the United States is maintained.

Herring meal exports to the United States virtually ceased in 1958. To some extent this was the result of the poor Norwegian herring catch, but a downward trend in Norwegian fish meal exports to the United States has been noted in recent years. Norwegian fish meal exporters have found it increasingly difficult to compete with other types of feeds on the American market, and have been able to obtain better prices for their product in Europe, according to a March 20, 1959, dispatch from the United States Embassy at Oslo.

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WINTER HERRING FISHERY FAILED AGAIN IN 1959:

For the second consecutive year Norway's winter herring fishery has been a failure. With the end of the large and spring herring (winter herring) fishing season on April 8, the total catch was

Norway (Contd.):

only about 413,850 metric tons, or about 20.3 percent above the 344,053 tons caught during the very poor 1958 season. Fishing during the early and most productive part of the season was hampered severely by storms. The spring herring landings for the latter half of the season amounted to only 92,535 tons (value US$15.7 million), the lowest in 20 years.

The fishermen and fish meal and oil reduction plants are equipped to catch and process close to 1,116,000 tons during the fishing season of about 11-12 weeks. Landings of at least 744,000 tons are needed to insure a profitable season. As a result of the two successive failures of the winter herring fishery, the fishermen are in severe financial difficulties and the reduction plants have worked at only a fraction of their capacity, according to an April 10, 1959, dispatch from the United States Embassy at Oslo.

Peru

EXPORTS OF MARINE PRODUCTS, OCTOBER-DECEMBER AND YEAR 1958:

Exports of marine products by Peru in October-December 1958 amounted to 56,085 metric tons (valued at US$7.3 million). During the year 1958 exports totaled 161,656 tons valued at US$22.0 million. Fish meal was the leading item exported in terms of both tonnage and value.

Peruvian Exports of Principal Marine Products, October-December 1958 and Year 1958

Marine Products	4th Quarter 1958 1/			Year 1958 2/		
	Quantity	Value		Quantity	Value	
	Metric Tons	Million Soles	US$ 1,000	Metric Tons	Million Soles	US$ 1,000
Fish meal	29,061	82.9	3,336	105,777	271.1	11,635
Fish, frozen, canned, etc.	11,833	65.0	2,616	30,056	177.5	7,618
Fertilizer (guano)	13,181	26.1	1,050	15,133	29.6	1,270
Sperm oil	1,464	5.9	237	7,352	25.7	1,103
Fish oil	146	0.5	20	1,643	4.5	193
Whale oil	400	1.0	40	1,695	3.9	167
Total	56,085	181.4	7,299	161.656	512.3	21,986

1/F.o.b. values converted at rate of 24.85 soles equal US$1 for 4th quarter 1958.
2/F.o.b. values converted at rate of 23.30 soles equal US$1 for year 1958.

Philippines

CANNED FISH RETAIL AND WHOLESALE PRICES, MARCH 16, 1959:

Retail and wholesale prices on March 16, 1959, for canned sardines and canned salmon in Manila were:

Product	Wholesale	Retail
	US$/cs.	US¢/can
Canned Sardines:	(48 15-oz. cans)	(15-oz.)
U. S. brand	12.00-12.75	27.5-32.5
Japan brand	11.75	25.0-27.5
Canned Salmon:	(48 16-oz. cans)	(16-oz.)
U. S. brands	29.00	67.5-75.0

Portugal

CANNED FISH EXPORTS, 1958:

Portugal's exports of canned fish during 1958 amounted to 68,102 metric tons (4,217,000 cases), valued at US$36.0 million as compared with 58,407 tons, valued at US$35.0 million in 1957. Sardines in olive oil exported during 1958 amounted to 48,373 tons, valued at US$25.2 million.

Portuguese Canned Fish Exports, 1957-1958

Species	1958		1957	
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
Sardine in olive oil	48,373	25,210	40,084	23,650
Sardinelike fish in olive oil	6,681	4,551	6,419	4,840
Sardine & sardinelike fish in brine	1,441	331	1,433	353
Tuna & tunalike fish in olive oil	2,260	1,719	2,782	2,222
Tuna & tunalike fish in brine	906	466	522	290
Mackerel in olive oil	7,446	3,396	6,367	3,221
Other fish	995	329	800	382
Total	68,102	36,002	58,407	34,958

During 1958, the leading canned fish buyer was Germany with 11,744 tons (valued at US$6.3 million), followed by Italy with 11,123 tons (valued at US$5.7 million), Great Britain with 7,983 tons (valued at US$4.0 million), the United States with 6,399 tons (valued at US$4.5 million), and Belgium-Luxembourg with 4,922 tons (valued at US$2.5 million). Exports to the United States included 2,713 tons of anchovies, 2,540 tons of sardines, and 165 tons of tuna. (Conservas de Peixe, February 1959.)

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Portugal (Contd.):

CANNED FISH PACK, JANUARY-OCTOBER 1958:

The total pack of canned fish for January-October 1958 amounted to 46,580 metric tons as compared with 45,874 tons for the same period in 1957. Canned sardines in oil (31,198 tons) accounted for 67.0 percent of the January-October 1958 total pack, higher by 27.4 percent than the pack of 24,482 tons for the same period of 1957, the February 1959 Conservas de Peixe reports.

Portuguese Canned Fish Pack, January-October 1958

Product	Net Weight	Canners' Value
	Metric Tons	US$ 1,000
In Olive Oil:		
Sardines	31,198	17,831
Sardinelike fish	4,251	1,973
Anchovy fillets	2,701	2,289
Tuna	1,673	1,288
Other species (incl. shellfish)	525	340
In Brine:		
Sardinelike fish	5,423	962
Other species	809	200
Total	46,580	24,883

Note: Values converted at rate of 28.75 escudos equals US$1.

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FISHERIES TRENDS, DECEMBER 1958:

Sardine Fishing: During December 1958, the Portuguese fishing fleet landed 11,395 metric tons of sardines (valued at US$829,252 ex-vessel or about $72.80 a ton). In December 1957, a total of 12,488 tons of sardines was landed (valued at US$1,270,000).

Canneries purchased 49.2 percent or 5,609 tons of the sardines (valued at US$413,843 ex-vessel or about $73.80 a ton) during December. Only 139 tons were salted, and the balance of 5,647 tons was purchased for the fresh fish market.

Other Fishing: The December 1958 landings of fish other than sardines were principally 3,968 tons of anchovies (value US$425,774), 3,304 tons of chinchards (value US$102,956), 435 tons of tuna (value US$101,461), 190 tons of mackerel (value US$13,983), and 32 tons of bonito (value US$5,183). (Conservas de Peixe, February 1959.)

South-West Africa

FISHING INDUSTRY HAS GOOD YEAR IN 1958 DUE TO RECORD CANNED PILCHARD PRODUCTION:

The fishing industry of South-West Africa as a whole recorded a highly successful year due to a record production of canned pilchards at Walvis Bay (56,422 tons as compared with 42,838 tons in 1957). The rock or spiny lobster industry centered in Luderitz was less successful due mainly to generally unfavorable weather conditions which reduced the landings to nearly half of normal. The catch of white fish, which is of relatively minor importance when compared with pilchards or lobsters, also dropped considerably in 1958 due to the fact that fewer boats came up from Union of South Africa waters to fish for snoek.

Income of the fishing industry was estimated at about £8.5 (US$238 million) as compared with £7.3 (US$20.4 million) in 1957. A firm demand existed throughout the year for fish meal and canned fish at favorable prices, but the price of fish-body oil declined. All pilchard factories at Walvis Bay, however, are in the fortunate position of being able to pump their fish oil directly to dock-side storage tanks for bulk shipments. By chartering bulk cargo vessels, the industry has saved very substantial sums in shipping fish oil, primarily to Europe.

The exceptionally profitable year experienced by the pilchard industry is due to the excellent condition of the fish which made it possible to can a higher than normal proportion of the catch. The oil content of the fish was also above normal thereby enabling factories to recover nearly 20 percent more fish oil than in 1957.

There has been no change in the policy regarding annual quota limits on the total catch of pilchards (250,000 metric tons) and on the export of lobsters (3 million pounds). These quotas are apportioned between the six pilchard factories at Walvis Bay and the six lobster canning and freezing factories at Luderitz. There is a strong possibility that the 250,000-ton quota for pilchards will be revised upward this year to 260,000 tons but will then include both pilchards and maasbank-

South-West Africa (Contd.):

er. A small quantity of maasbanker are caught in the Walvis Bay area but are not now under a quota restriction as is the case in the Union of South Africa. It is improbable, however, that any further increases, other than that noted, will be permitted in the near future with respect to the total catch of fish or the number of factories operating in the territory.

Although pilchards are plentiful in the Walvis Bay area and the annual 250,000-ton catch could easily be exceeded, the Administration is clearly determined to limit the catch to the present level until such time as it has been established through research that a greater rate of exploitation will not deplete this natural resource.

The Government is continuing with a very active fisheries research program in which it works closely with the Union of South Africa's Department of Fisheries. There are two research stations in the territory, one at Luderitz and the other at Walvis Bay. A new and larger research station is now under construction at the latter port. The Administration also owns and operates three research vessels and is commissioning a fourth vessel in April, 1959.

The outlook for 1959 is encouraging. Although it is expected that the market for canned pilchards will be weakened by intensified competition, fish meal prices and sales are promising. Spiny lobster catches at Luderitz have also been exceptionally high in 1959. The lobster catch for the early part of 1959 is already approaching the total landed during the entire year of 1958. There is some speculation to the effect that the spiny lobster export quota may be temporarily increased for 1959 as a means of compensating the industry for the poor catch last year. It is not improbable that the Administration may consent to such a measure especially since the pilchard catch in Union of South Africa waters was allowed to exceed the quota limit in 1958 for a similar reason.

Since spiny lobster catches in Union waters have also been heavy there is every likelihood that there will be a very substantial increase in exports of frozen spiny lobster tails to the United States in 1959. (United States Consul in Cape Town reported in a recent dispatch.)

Spain

BILBAO FISHERIES TRENDS, MARCH 1959:

During the middle of March the Bermeo fleet of 7 vessels fishing for tuna off the waters of Dakar in French West Africa returned to its home port. The operation this year (the third in as many years) was more successful, due principally to better transportation for the fresh tuna from the fishing grounds to the temporary storage facilities in Dakar. This year five transport vessels were used instead of the two previously available for transhipment of the fish. The fishing vessels returning home with about 115 metric tons of tuna, averaged 7 to 8 tons per work day, although a record haul of 20 tons in a single day was made by one of the vessels.

Financially, this year was a huge success. Each vessel earned 920,000 pesetas (about US$21,905) almost double the earnings of a single vessel during the first year. One vessel, the Siempre Santa Maria was shipwrecked early in the season. Its owners, however, will share in the profits of the other vessels.

In contrast to the financially successful operations of the Dakar tuna fleet, the 105 vessels of the same type and tonnage which remained in Bermeo during the winter season and fished in home waters caught fish (mackerel, sea-breams, anchovies, etc.) worth about US$175,000 or about US$1,667 per vessel. The winter season for the local fishermen in Bermeo was disastrous, mainly because of the lack of salted bait. On this account many of the craft were unable to put out to sea for several weeks at a time. The hardships suffered by the fishermen and their families this winter were such that the Brotherhood of Fishermen in Bermeo was obliged to distribute cash donations among its members. Each fisherman received about US$11.90 at Christmas time and at New Year's an additional US$9.52. As the cash reserves of the Brotherhood were not sufficient to take care of all the needs, it applied to a local bank for a loan. Altogether, the Brotherhood distributed the sum of about US$36,321 as outright donations and US$19,833 as loan advancements which the fishermen will repay whenever they can.

On the occasion of the recent renewal of the commercial treaty between Spain and Iceland, the Icelandic Ambassador to France, also accredited to Spain as Minister, spoke to a high official of the Spanish Ministry of Commerce who was very much interested in the possibility of importing frozen cod from Iceland for sale by the Spanish Government through its supermarket outlets. The Spanish official talked about importing an initial amount of 2,000-5,000 tons of frozen cod within the near future. This, in the opinion of the Bilbao representative of the Union of Icelandic Fish Producers, seems to be entirely out of the question at present, since Spain does not have suitable or sufficient refrigeration facilities to import such large amounts of frozen cod, according to a dispatch dated April 8, 1959 from the United States Consul in Bilbao.

* * * * *

TUNA FISHING INDUSTRY EXPANDING:

Spain's most commercially-important tunas are bluefin (Thunnus thynnus) and albacore, which are referred to as "red tuna" and "white tuna," respectively. Spanish canneries usually process all tunas in the same manner, generally labeling them with the common name of tuna.

Spain's principal fishery zone for albacore and bonito is the North, where fleets of vessels from the Cantabrica and Northeast regions have fished successfully for many years. Spain has also begun to fish in the subtropical waters of the East Atlantic--an area which is considered to have excellent prospects.

Spain (Contd.):

The north fishery zone has developed into a major fishery area because the fishing fleets of the north and northwestern ports of Spain have been the only fleets to pursue tuna fishing on a large scale. These fleets have not limited their operations to fishing for bonito off the Spanish coast but have also fished off West Africa for tropical tuna.

Spain's Landings of Tuna and Tunalike Fish, 1953-57

Year	Quantity	Value	
	Metric Tons	Millions of Pesetas	US$ 1,000
1957	42,409.8	489.6	11,657
1956	40,380.2	408.8	13,438
1955	36,822.3	243.9	8,018
1954	41,480.8	302.8	9,954
1953	32,987.3	253.9	8,347

Note: Values for 1953-56 converted at the rate of 30.42 Spanish pesetas equals US$1. Values for 1957 converted at the rate of 42.00 pesetas equals US$1.

Except for unusually high landings in 1954, the table shows that tuna landings have increased steadily. Statistics on the 1958 landings have not yet been compiled, but it is estimated that the 1958 landings were higher than in 1957.

The Basque bonito fleet, operating out of the port of Las Palmas, Grand Canary Island, fished southern waters for tropical tuna. Although the landings form a small part of the total, they deserve mention. During the 1956/57 season, the Basque fleet landed about 1.3 million pounds of tuna. The landings in the 1957/58 season increased to about 3.5 million pounds. The 1958/59 season is expected to also be very successful for the Basque fleet, especially since the fleet includes several refrigerated vessels. (Industria Conservera, Vigo, Spain, December 1958.)

* * * * *

VIGO FISHERIES TRENDS, MARCH 1959:

Fish Exchange: Landings of fish and shellfish in March 1959 at the Vigo Fish Exchange totaled 4,735 metric tons, an increase of 203 tons over the preceding month and 511 tons more than March 1958. Major species sold over the exchange in March 1959 were: pomfret 1,957 tons; small hake 1,160 tons; and horse mackerel 440 tons.

March 1959 landings were valued at US$1,319,000 (US$1.00 = 42 pesetas), a decline of US$65,000 from the preceding month, but higher by US$345,000 as compared with March 1958.

The landings at the exchange from January-March 1959 totaled 15,097 tons, a drop of 7,730 tons from the last quarter of 1958, but an increase of 3,616 tons over the same period in 1958. In the first quarter of 1959 landings were valued at US$3,894,000, about US$1,075,000 above the January-March 1958 value.

Fish Canning and Processing: Canners at Vigo purchased only 82 tons of fish and shellfish from the exchange during March this year. During March 1958 the canners purchased 321 tons.

In the first quarter of 1959 the canners purchased only 583 metric tons, a decline of 4,676 tons from the last quarter of 1958, but an increase of 93 tons over the first quarter of 1958.

Marketing Trends: Following a year of good catches in 1958, the canners expect good supplies in 1959 when the sardines and albacore reappear. But pessimism prevails as to the market for canned fishery products. Predictions were that sardines would be plentiful with lifting of the closed season during April. Due to the tinplate shortage, canners fear "starvation in the midst of plenty." In addition, canners felt that the prices of fish and shellfish are too high. Since early 1958 sardine prices have risen 80 percent, anchovies 125 percent, and skipper 100 percent. The one exception among the major fishery products was albacore tuna which declined about 5 percent.

As a result of the higher raw material costs, Spanish canned fish products are becoming a luxury item in the domestic market and are being priced out of the world market. Ex-vessel prices for sardines in Portugal are about 50 percent lower than the prices paid to the Spanish vessels. Due to increasing costs, Spanish bankers were screening early spring loan applications carefully.

Canned stocks normally decrease during late winter and early spring because of increased consumer demand for higher-quality "aged" stocks, but canned albacore tuna stocks have moved slowly through April as a result of increased catches in southern Europe in 1958. The new canning season will be in full swing by June or July.

Government Loans to Fishing Industry: The Central Bank of Maritime Credit of the Marine Social Institute has granted a loan of about US$236,000 to the Shipowner's Cooperative of Cadiz for the construction of an ice plant with a daily capacity of 300 tons. In January the same bank granted loans of US$371,000 for construction and overhauling of fishing vessels and for improvements in shore-based fishery plants. Loans made by this bank during the past 15 years have totaled US$143 million.

Sweden

BIOLOGY OF WHITING STUDIED:

The Swedish fishery research vessel Skagerack returned to Goteborg in March after a month's trip to the North Sea and the Skagerrak. The trip was part of a 6-year research program for the purpose of investigating the biology of whiting. After the survey has been completed it is expected that a review of the whiting's life and habits over a period of one year will have been recorded.

An abundance of research material was obtained. No results, however, have as yet been published, except for the comment of the leader of the expedition to the effect that it was found that at this time of the year large whiting are found only in one area of the North Sea, namely the Egersund Bank.

Trawling took place every day and the whiting caught were carefully analyzed. Every single fish was measured and scale samples were examined to determine the age. Efforts were also made to determine the existence of different races by recording the area, time, and age of maturity.

Other studies were also made for the International Council for Exploration of the Sea, for example the relationship between trawl mesh size and the size of the fish caught. An international convention contains regulations as to the size of mesh which may be used for different kinds of

Sweden (Contd.):

fish, and it was desired to find out how this works out in practice. It was found that the fiber used in the trawl plays an important part. A trawl made of artificial fibers, for example, retains larger fish than one with the same size of mesh made of manila.

Local sources state that a new convention on trawl-mesh size may therefore be needed, and for this reason preliminary investigations of this nature are being made (United States Consul in Goteborg reported on March 25, 1959).

Switzerland

MARKET FOR CANNED SARDINES:

Imports of California sardines (pilchards) by Switzerland are included under tariff No. 89 a, entitled "Sardines (pilchards) and herring in tomato sauce; preserved salmon." Official customs statistics do not separate pilchards from herring and salmon imports. According to 1958 figures, imports totaled 774.6 metric tons valued at about 2.0 million Swiss francs (US$466,000).

Switzerland's Imports of Canned Sardines (Pilchards) and Herring in Tomato Sauce and Preserved Salmon

Country of Origin	Quantity	Value	
	Metric Tons	1,000 Francs	US$ 1,000
Japan	357.7	729	169
Portugal	39.4	89	21
Union of South Africa	51.9	70	16
South-West Africa	68.7	99	23
United States	36.8	99	23
Total	554.5	1,086	252

West Germany supplied 148.8 tons under tariff item 89 a, valued at 457,849 francs (US$106,000) and Holland, 29.7 tons valued at 271,542 francs (US$63,000). It is believed, however, that in the exports of these two countries to Switzerland no sardines were included.

Switzerland's per capita consumption of fish is one of the lowest in Europe in spite of publicity campaigns by the importers. While some consumer groups still consider fish to be a luxury, the main reason is apparently that the average Swiss does not care for fish in general.

The demand for both California and Japanese pilchards is considered fair. In 1958 the suppliers' quotations for canned California pilchards in tomato sauce sold in oval cans was US$7.25 per case (48 cans of 15 oz. each) landed aboard ship California while the Japanese exporters offered the same quantity at US$8.50 c. & f. Antwerp. Freight and duty per can amounted to Swiss francs 0.28 (6.5 U. S. cents) for California sardines and Swiss francs 0.21 (4.9 cents) for Japanese pilchards. Wholesale costs per can were reported to be for U. S. pilchards Swiss francs 0.93 (21.6 cents) and for Japanese Swiss francs 0.97 (22.5 cents). The wholesaler's margin of profit in both instances is 10 percent.

Prospects for considerably increased Swiss fish consumption in the near future are small. On the other hand consumption of seafood is increasing as indicated by the fact that in 1958 imports of lobsters, oysters, and mussels exceeded the highs of the boom year of 1957. (United States Embassy in Bern reported on March 24, 1959.)

Trinidad

PLANS FOR TUNA PROCESSING PLANT PROGRESSING:

Plans for a new tuna processing plant in Trinidad are moving steadily ahead. The executive vice-president of the new company has completed arrangements with the Government for a factory site. A consulting engineering firm has been asked to prepare plans so that construction tenders can be requested.

The total investment is expected to be about US$5,300,000. Capital will be provided by Hong Kong interests, a well-known local industrialist, and by some other Trinidadian investors. A Japanese firm will supply 5 or more fishing vessels that are expected to fish for tuna off Africa and Latin America.

The plant will have freezing and cold-storage units as well as processing and canning facilities. Canned tuna is expected to be the most important product with the United States as a main market. There should be no problem in selling locally large quantities of fish meal, an important byproduct of the operations. The plant may also be used on a modest scale to process local fruits and vegetables for consumption in the local area as well as for export.

Union of South Africa

FISH MEAL MARKETING PROSPECTS GOOD:

The general manager of a group of fishing companies operating in the Union and South-West Africa stated in Cape Town in mid-March that prospects for the marketing of fish meal were excellent this year. He reported that the industry already had entered into contracts to supply 74,000 metric tons of fish meal at higher prices than ever before, principally to Great Britain and other European countries.

Union of South Africa (Contd.):

Fish meal exports from the Union and South-West Africa totaled 57,244 short tons in 1957 and 83,481 tons in the period January 1-November 30, 1958.

While optimistic about prospects for marketing fish meal, the industry anticipates some problems in marketing canned pilchards, particularly in the Far East and the Philippines, due largely to Japanese competition.

* * * * *

SHORE BASED WHALING PRODUCTION, 1957-1958:

Union of South Africa's whale kill by the Durban shore-based fleet was slightly higher in 1958 than in 1957 (1,616 as compared with 1,606 whales), but the over-all yield of oil and whale byproducts was down about 2.5 percent. The total value of the 1958 catch was about US$2,938,000 (SAŁ1,050,000).

Union of South Africa's Production of Whale and Sperm Oils and Byproducts, 1957-1958

Product	1958	1957
	(Short Tons)	
Whale oil	7,140	7,772
Sperm oil	4,067	4,200
Whale meat	5,700	5,700
Whale meat extract	330	169
Vitamin oils	20	17
Total	17,257	17,699

The Union of South Africa has not participated in Antarctic whaling operations since the Abraham Larsen whale factoryship was sold to Japan at the end of the 1956/57 season.

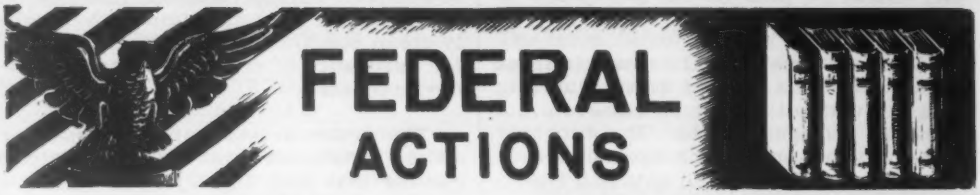
Venezuela

MARKET FOR CANNED SARDINES:

Leading Venezuelan importers, including a large chain of supermarkets, catering to the large foreign colony, report that they ceased importing sardines due to the November 30, 1958, duty increase from Bs 2.00 to Bs 8.00 a kilo (about US$0.27-1.09 a pound). They neither import now nor see future importation as a possibility.

Over one-fourth of all sardines canned in Venezuela are packed in the 130-gram (about 4.6-oz.) flat square can. This pack retails at Bs 0.50 a can (15 U. S. cents). The Bs 1.04 (31.2 cents) duty on this can forces the imported product up to a retail price of Bs 1.54 (46.2 cents), even higher if freight costs are not offset by high local production costs, and this difference is even more pronounced in the heavier packs. The imported products cannot compete at three times the price, particularly with local sardines of satisfactory quality in a variety of packs on the market.

The Venezuelan market for imported sardines is virtually gone and future exports of sardines to Venezuela will be insignificant unless present duties are dropped. This is extremely unlikely, states a United States Embassy dispatch from Caracas, dated March 25.



Federal Trade Commission

CALIFORNIA CANNER OF FISHERY PRODUCTS DENIES CHARGES OF ILLEGAL BROKERAGE PAYMENTS:

A San Francisco, Calif., canner of fish and fish products on April 23, 1959, denied (Answer 7438 Food Products) Federal Trade Commission charges of illegal brokerage payments to food chain customers and asked that the complaint be dismissed.

The San Francisco firm is a buyer, processor, and canner of fish and fish products, plus other food products. The firm sells its products nationally, both through brokers who are paid a $2\frac{1}{2}$ percent commission and directly to large food chain retailers.

The Commission's complaint of May 18, 1958, alleged that the firm violated Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act by granting various chains allowances in lieu of brokerage on direct purchases in their own names or for their own accounts for resale.

The company asks that the complaint be dismissed.

* * * * *

SALMON CANNER ORDERED TO STOP PAYMENT OF ILLEGAL BROKERAGE:

The Federal Trade Commission on April 9, 1959, ordered (Order 7201 Canned Seafood) a Seattle, Wash., salmon canner and its vice-president to stop making unlawful brokerage payments to customers.

The Commission adopted Hearing Examiner Loren H. Laughlin's initial decision based on the evidence presented by its counsel. The respondents neither answered the complaint of July 22, 1958, nor appeared at the hearing.

The examiner had found that the company granted discounts or allowance in lieu of brokerage or price concessions reflecting brokerage in selling both its own seafood pack and that of other packers for which it acted as primary broker.

Agreeing that these payments are forbidden by Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act, the Commission ordered them stopped.

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

ANTIBIOTIC USE APPROVED TO AID IN MAINTAINING QUALITY OF FRESH FISHERY PRODUCTS:

The use of an antibiotic to aid in keeping certain fresh-caught fish and shellfish in sound condition was authorized on April 21, 1959, for the first time by the Food and Drug Administration in an order setting a safe limit on the amount that may remain in these foods without harm to the consumer.

The order allows commercial fishermen to use an antibiotic known as chlorotetracycline on fresh-caught whole, headed, and gutted fish, shucked scallops, and unpeeled shrimp. It does not allow use of the antibiotic on processed seafood products, including fish cuts, steaks, and fillets, peeled shrimp, and shucked oysters. The Agency pointed out that chlorotetracycline has been used on uncooked poultry since 1955

and extensive data on its safety are available.

A minute amount will remain in fresh fishery products treated with the antibiotic and will not always be removed in cooking, the Agency said. The Agency's scientists and physicians have determined from all available data and feeding tests that this amount of chlorotetracycline can be consumed without harm, even by the very few exceptional persons who may have developed a sensitivity to antibiotics.

The law requires the label of treated fishery products to show the fish contains chlorotetracycline and that it has a preservative effect.

Commercial fishermen may use the antibiotic as a dip or in the ice as an aid to keep their catch in sound condition. They may not use the antibiotic in place of adequate refrigeration, nor, because of its use, neglect to maintain thoroughly clean conditions aboard their boats for assurance of clean, wholesome fishery products.

The order sets 5 parts per million as the maximum amount of chlorotetracycline that may legally remain on fresh-caught unprocessed fishery products. The order became effective on publication in the Federal Register of April 21.

The action was taken in response to a petition by American Cyanamid Company, New York City, for establishment of a tolerance of 5 parts per million for use of chlorotetracycline on fresh fish and any cuts from it, shucked oysters, shucked scallops, and shrimp, both peeled and unpeeled. The regulations as printed in the Federal Register of April 21, 1959 follow:

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER B—FOOD AND FOOD PRODUCTS

PART 120—TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES

Tolerances for Residues of Chlortetracycline

A petition was filed with the Food and Drug Administration by the American Cyanamid Company, 30 Rockefeller Plaza, New York 20, New York, requesting the establishment of tolerances for residues of chlortetracycline in or on fish (vertebrate) and any cuts therefrom, oysters (shucked), scallops (shucked), shrimp (peeled), shrimp (unpeeled), each in uncooked form. Tolerances to permit application of chlortetracycline to certain of these seafood products are not being established in this order because they are products of plant processing rather than raw agricultural commodities.

The Secretary of Agriculture has certified that this pesticide chemical is useful for the purposes for which tolerances are being established.

After consideration of the data submitted in the petition and other relevant material which show that the tolerance established in this order will protect the public health, and by virtue of the authority vested in the Secretary of Health, Education, and Welfare by the Federal Food, Drug, and Cosmetic Act (sec. 408(d)(2), 68 Stat. 512; 21 U.S.C. 346a(d)(2)) and delegated to the Commissioner of Food and Drugs by the Secretary (21 CFR 120.7(g)), the regulations for tolerances for pesticide chemicals in or on raw agricultural commodities (23 F.R. 6403) are amended by changing § 120.117 to read as follows:

§ 120.117 Tolerances for residues of chlortetracycline.

Tolerances are established for residues of chlortetracycline as follows:

(a) 7 parts per million in or on uncooked poultry. This tolerance level shall not be exceeded in any part of the poultry.

(b) 5 parts per million in or on fish (vertebrate), scallops (shucked), shrimp (unpeeled), from application for retardation of spoilage to whole, headed, or gutted fish (vertebrate); scallops (shucked); shrimp (unpeeled); each in fresh, uncooked, unfrozen form.

Any person who will be adversely affected by the foregoing order may, at any time prior to the thirtieth day from the effective date thereof, file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue SW., Washington 25, D.C., written objections thereto. Objections shall show wherein the person filing will be adversely affected by this order, specify with particularity the provisions of the order deemed objectionable and reasonable grounds for the objections, and request a public hearing upon the objections. Objections may be accompanied by a memorandum or brief in support thereof. All documents shall be filed in quintuplicate.

Effective date. This order shall be effective upon publication in the FEDERAL REGISTER.

(Sec. 408(d)(2), 68 Stat. 512; 21 U.S.C. 346a(d)(2))

Dated: April 14, 1959.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

Note: Also see Commercial Fisheries Review, March 1958, p. 98.

Department of the Interior

FISH AND WILDLIFE SERVICE

FISHING VESSEL MORTGAGE INSURANCE PROCEDURES:

A mortgage and loan insurance program designed to facilitate financing the construction of modern fishing vessels was announced on April 28 by the Secretary of the Interior.

Under this program the Government guarantees the repayment of mortgages and loans up to 75 percent of the vessel cost. For this guarantee, the vessel owner will pay the Government a premium of one percent of the amount due on mortgages, except that when the mortgage is for 50 percent or less of the vessel cost, the rate will be three-quarters of one percent. The premium on loans will be one-half of one percent.

A mortgage does not apply until a vessel has been constructed and registered. The term "loan" applies to that period before completion and registry. Mortgage insurance will be limited to 15 years for a vessel. The vessel owner will protect this investment against insurable losses through private companies.

Regulations governing this mortgage and loan insurance program appeared in the Federal Register of April 28, 1959. They will be effective May 28, 1959. The proposals were first carried in the Federal Register on January 23, 1959. A 30-day period for comment was allowed.

The insurance function was transferred from the Maritime Administration, Department of Commerce, in April 1958, under the provisions of the Fish and Wildlife Act of 1956.

The regulations as published in the Federal Register follow:

SUBCHAPTER J—AID TO FISHERIES

PART 160—FISHERIES LOAN FUND PROCEDURES

PART 165—FISHING VESSEL MORTGAGE INSURANCE PROCEDURES

By notice of proposed rule making published on January 23, 1959 (24 F.R. 528), notice was given of the intention of the Secretary of the Interior to adopt regulations as therein set forth in tentative form to govern Federal ship mortgage insurance for fishing vessels. The public was informed that consideration would be given to any written comments, suggestions, or objections relating to the proposed regulations which were received by the Director, Bureau of Commercial Fisheries, Washington 25, D.C., within thirty days of the date of publication of the notice in the FEDERAL REGISTER. Response to the notice of proposed rule making was limited to one suggestion which has been incorporated in § 165.3 (c)(1) of the regulations as set forth below.

Accordingly, the headnotes for Subchapter J and Part 160 are revised as indicated above and a new Part 165 designated "Fishing Vessel Mortgage Insurance Procedures" is adopted as set forth below. These revisions shall become effective at the beginning of the 30th calendar day following the date of this publication in the FEDERAL REGISTER.

Dated: April 21, 1959.

FRED A. SEATON,
Secretary of the Interior.

Sec.
165.1 Basis and purpose.
165.2 Definitions.
165.3 Eligibility requirements.
165.4 Applications.
165.5 Commitment.
165.6 Closing procedures.
165.7 Defaults.

AUTHORITY: §§ 165.1 to 165.7 issued under Title XI, 52 Stat. 969, as amended, 46 U.S.C. 1271–1279; sec. 6, 70 Stat. 1122; 16 U.S.C. 742e. Sec. 3, Bureau of the Budget determination March 22, 1958, 23 F.R. 2304.

§ 165.1 Basis and purpose.

(a) Title XI of the Merchant Marine Act, 1936, as amended (46 U.S.C. 1271–1279), authorizes the Secretary of Commerce to insure certain eligible loans and mortgages on vessels owned by citizens of the United States. As found and determined by the Director of the Bureau of the Budget on March 22, 1958 (23 F.R. 2304), all functions of the Maritime Administration, Department of Commerce, which pertain to Federal ship mortgage insurance for fishing vessels under authority of Title XI of the Merchant Marine Act of 1936, as amended (46 U.S.C. 1271–1279), were transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of 1956 (16 U.S.C. 742e).

(b) The purpose of this part is to prescribe rules and regulations governing Federal ship mortgage and loan insurance with respect to fishing vessels owned by citizens of the United States under Title XI, Merchant Marine Act, 1936, as amended.

§ 165.2 Definitions.

(a) *Fishing vessel.* The term "fishing vessel" includes all types of vessels owned by citizens of the United States used directly in the catching of fish or shellfish for commercial purposes.

(b) *Mortgage.* The term "mortgage" includes a preferred mortgage as defined in the Ship Mortgage Act, 1920, as amended, and a mortgage which will become a preferred mortgage when recorded and endorsed as required by the Ship Mortgage Act, 1920, as amended.

(c) *Loan.* The term "loan" includes any loan or advance of credit other than a mortgage loan.

(d) *Mortgagee.* The term "mortgagee" includes the original maker of a loan secured by a mortgage and his successors and assigns.

(e) *Lender.* The term "lender" includes the original maker of a loan or advance of credit other than a loan secured by a mortgage and his successors and assigns.

(f) *Mortgagor.* The term "mortgagor" includes the original borrower under a mortgage approved by the Secretary, and his successors and assigns.

(g) *Actual cost.* The term "actual cost" of a vessel as of any specified date means the aggregate as determined by the Secretary of (1) all amounts paid by or for the account of the mortgagor or borrower on or before that date, and (2) all amounts which the mortgagee is then obligated to pay from time to time thereafter under a contract or contracts for the construction, reconstruction or reconditioning (including designing, inspecting, outfitting and equipping) of the vessels, provided such contract or contracts shall include, in addition to profit, only those items customarily included in such contract or contracts as contractor's items of cost, except where the Secretary finds that those charges are unfair or unreasonable.

(h) *Reconstruction; reconditioning.* The terms "reconstruction" and "reconditioning" contemplates a rebuilding of the hull or hull and engine of such magnitude that the actual cost is more than thirty percent of the replacement value of the vessel.

(i) *Secretary.* The term "Secretary" means the Secretary of the Interior or his authorized representatives.

(j) *Act.* The term "Act" means the Merchant Marine Act, 1936, as amended.

§ 165.3 Eligibility requirements.

(a) *Mortgage.* To be eligible for insurance under this part, a mortgage:

(1) Shall have a mortgagee approved by the Secretary of the Interior as responsible and able to service the mortgage properly; and a mortgagor ap-

proved by the Secretary as possessing the ability, experience, financial resources, and other qualifications necessary to the adequate operation and maintenance of the mortgaged property;

(2) Shall involve an obligation in a principal amount which does not exceed 75 percent of the actual cost of the vessel, such actual cost to be determined by the Secretary prior to the execution of the mortgage and such determination to be conclusive for the purpose of determining the principal amount of the mortgage;

(3) Shall secure bonds, notes, or other obligations having maturity dates satisfactory to the Secretary not to exceed 15 years from the date of execution. In no event will a mortgage be insured for a time longer than the economic life of the mortgaged property, as determined by the Secretary. Ordinarily, the economic life of a vessel will be determined as running not more than 10 years from the date of completion of any reconstruction or reconditioning thereof.

(4) Shall contain amortization provisions satisfactory to the Secretary requiring periodic payments by the mortgagor;

(5) Shall secure bonds, notes or other obligations bearing interest (exclusive of premium charges for insurance) at a rate not to exceed 5 per centum per annum on the amount of the unpaid principal at any time; or not to exceed 6 per centum per annum if the Secretary finds that in certain areas or under special circumstances, the mortgage or lending market demands it;

(6) Shall provide, in a manner satisfactory to the Secretary, for the application of the mortgagor's periodic payments to amortization of the principal of the mortgage, exclusive of the amount allocated to interest;

(7) Shall contain such terms and provisions with respect to the operation of the vessel or vessels, in a fishery or fisheries approved by the Secretary, repairs, alterations, payment of taxes, insurance, delinquency charges, revisions, foreclosure proceedings, anticipation of maturity, additional and secondary liens, and other matters pertinent to the security as the Secretary may require;

(8) Shall secure a loan made to aid in financing, including payment of loans previously made to finance, and reimbursement of the mortgagor for expenditures previously made for construction, reconstruction and reconditioning (including design, inspecting, outfitting and equipping) of fishing vessels being done or having been done by the firm submitting the lowest bid after the receipt of competitive bids, unless acceptance of a higher bid has been approved by the Secretary;

(9) Shall provide that the mortgagor shall pay to the mortgagee the amount required for the payment of each mortgage insurance premium charge at least 60 days before the payment of such premium charge to the Secretary is due and shall further provide that the failure of the mortgagor to make such payment shall be a default of the mortgage;

(10) Shall provide for the acceleration of the maturity date and immediate payment of the indebtedness in the event of any default in the performance conditions of the mortgage or in the event of the loss or destruction of the mortgaged property;

(11) Shall have the contract of insurance or commitment to insure approved before the launching of a vessel, if the application covers vessel construction, or before the work of reconstruction or reconditioning is completed if the mortgage is to pay for reconstruction or reconditioning; and

(12) Shall contain such other provisions as may be agreed upon between the mortgagor and mortgagee which are not inconsistent with the provisions of the preceding paragraphs of this subsection and which are not disapproved by the Secretary.

(b) *Loans.* To be eligible for insurance under this part a loan:

(1) Shall be made by a lender approved by the Secretary to a borrower approved by the Secretary as possessing the ability, experience, financial resources, and other qualifications necessary to the adequate operation and maintenance of the property;

(2) Shall be made to aid in financing, include payment of loans previously made to finance, and reimbursement of the borrower for expenditures previously made for construction, reconstruction, or reconditioning (including design, inspection, outfitting, and equipment) of fishing vessels being done or having been done by the firm submitting the lowest bid after the receipt of competitive bids, unless the acceptance of a higher bid has been approved by the Secretary;

(3) Shall be payable prior to or simultaneously with execution of the mortgage;

(4) Shall provide that no advance shall be made thereunder unless the sum of such advance and the principal amount of all other advances under insured loans then outstanding at the time of said advance shall be less than 75 percent of the actual cost of such vessel, such actual cost to be determined by the Secretary and such determination to be conclusive for the purpose of determining the principal amount of the loan;

(5) Shall provide for the payment first, from sources other than the insured loan, by and for the account of the owner, of not less than 25 per centum of actual cost, and thereafter for payments by the lender direct to the shipyard or other contractors, except where the payment is for reimbursement of the borrower for amounts expended by or for the account of the borrower on account of actual cost but excluding reimbursement for payments required to meet the first 25 per centum of the actual cost: *Provided,* That no payment shall be made by the lender until work representing 25 per centum of actual cost shall have been performed and that payments by the lender shall at no time exceed 75 per centum of actual cost of work performed to the time of payment;

(6) Shall provide that the borrower shall pay to the lender the amount required for the payment of each loan insurance premium charge at least 60 days before the payment of such premium charge to the Secretary is due, and which shall further provide that the failure of the borrower to make such payment shall give the lender the right to mature the loan;

(7) Shall bear interest at an average interest rate not to exceed the maximum rate permitted by subparagraph (5) of paragraph (a) of this section;

(8) Shall provide for vesting of title to the vessel in the borrower according to payments made subject only to the lien or other rights of the contractor for additional amounts due and unpaid;

(9) The furnishing of satisfactory insurance and a satisfactory performance bond by the contractor;

(10) The performance of the work substantially in accordance with contract plans and specifications approved by the Secretary; with the provision that all changes under the contract require approval of the Secretary prior to the commencement of work involving the changed specifications; and the furnishing of all technical material necessary for the Secretary's approval of the changes;

(11) The furnishing of two copies of all working plans, schedules and sketches promptly after approval by the owner; two copies of correspondence regarding work being done or to be done; and one copy of the vessel's certificates, documents and test reports if required by the Secretary;

(12) Shall provide for a chattel mortgage on the vessel being constructed and such other security or collateral as the Secretary may require;

(13) Shall provide for the acceleration of the maturity date and immediate payment of the indebtedness in the event of any default in the performance conditions of the loan (mortgage) or in the event of the loss or destructon of the property (mortgaged property); and

(14) Shall contain such other provisions as may be agreed upon between the borrower and the lender which are not inconsistent with the provisions of the subparagraphs (1) to (13) of this paragraph and which shall not be disapproved by the Secretary, and such other provisions as may be required by the Secretary.

(c) *Premium charges.* (1) In the case of any mortgage insured under this part, the annual premium charge for such insurance shall be one per centum of the average principal amount of the mortgage outstanding if the face amount of the mortgage represents more than 50 per centum of the actual cost of the construction, reconstruction or reconditioning, and three-fourths of one per centum if the face amount of the mortgage represents 50 per centum or less of the actual cost of the construction, reconstruction or reconditioning.

(2) In the case of loans insured under this part the annual premium charge for such insurance shall be one-half of one per centum per annum of the average principal amount of the loan outstanding.

(3) Premium payments shall be made when moneys are first advanced under the mortgage or loan agreement and on each anniversary date thereafter. In the event that the Secretary at any time determines that the amount of any premium charge is not correct, he shall promptly give notice thereof to the lender and the borrower, specifying the amount of the deficiency or excess. The lender shall, within 30 days after receipt of said notice, pay or cause to be paid to the Secretary the amount of any deficiency. The Secretary shall promptly refund to the lender the amount of any excess.

(4) Unless otherwise specified by the Secretary, all premium charges may be

paid by check, payable to the Secretary of the Interior delivered to the Bureau of Commercial Fisheries, Department of the Interior, Washington 25, D.C., accompanied by a letter stating that the payment is on account of a premium charge under the contract of insurance and specifying the period covered by the payment.

(5) Each premium charge shall be deemed to be fully earned when paid and no refund will be made by the Secretary of any premium charge paid in the event the insurance is terminated.

§ 165.4 Applications.

Applications may be for mortgage insurance, loan insurance, or both, or for commitments to insure.

(a) *Where filed.* Applications shall be filed with the Director, Bureau of Commercial Fisheries, Department of the Interior, Washington 25, D.C., on an application form furnished by the Bureau except that, in the discretion of the Secretary, an application made other than by use of the prescribed form may be considered if the application contains information deemed to be sufficient.

(b) *Processing of applications.* If it is determined on the basis of a preliminary review, that the application is complete and appears to be in conformity with the Act and this part, a field examination will be made. Following completion of the field examination, the application will be forwarded with an appropriate report to the Bureau of Commercial Fisheries, Washington, D.C. The application and all supporting documents must be filed in sufficient time to permit the Secretary to make a full and complete investigation and to take all other action required in respect thereto, and in any event not later than 90 days prior to the anticipated date of the closing of the transaction.

(c) *Books, records, and reports.* The Secretary shall have the right to inspect such books and records of the applicant as the Secretary may deem necessary. A commitment to insure or a contract of insurance made under this part shall be made only upon the agreement of the borrower and lender to furnish the Secretary, promptly upon his request, such reasonable material and pertinent reports, evidence, proof and information as he may require in connection with insurance granted or applied for, and to permit the Secretary, upon his request, to make such reasonable examination and audit of his records and books of account as the Secretary may deem necessary in connection with insurance granted or applied for.

(d) *Inspection of property.* The Secretary shall have access at all times to all vessels with respect to a loan or mortgage which is insured or for which an application for insurance has been filed.

(e) *Investigation fee.* Each application must be accompanied by payment pursuant to section 1104(e) of the Act in the amount of $50 or one-half of one percent of the original principal amount of the mortgage or loan to be insured, whichever is less, which payment will be retained by the Secretary irrespective of the final disposition of the application. After preliminary consideration of the application, the applicant shall pay to the Secretary upon request such additional amount or amounts as the Secretary may deem reasonable for the investigation of the application for insurance, necessary appraisals, issuance of commitments, and inspection of property during construction, reconstruction or reconditioning: *Provided*, That total charges shall not aggregate more than one-half of one percent of the original principal amount of the mortgage or loan to be insured. Any additional amount or amounts so paid shall be retained by the Secretary if the application is approved, and one-half of any additional amount or amounts so paid shall be retained by the Secretary if the application is not approved. Unless otherwise agreed by the mortgagor or borrower and the mortgagee or lender, all such amounts shall be paid by the mortgagor or borrower.

§ 165.5 Commitment.

A commitment to insure the loan or mortgage will be issued by the Secretary, when such a commitment is required prior to the actual completion of the note and/or mortgage. This commitment will provide that the Secretary will insure a loan or mortgage, and will further state the terms and conditions under which this insurance will be issued. It will also contain the covenants to be accepted by the borrower and lender.

§ 165.6 Closing procedure.

The contract of insurance shall take effect upon payment of the first year's insurance premium in accordance with § 165.3(c) and the signing of the contract of insurance by the Secretary, the borrower and the lender.

§ 165.7 Defaults.

(a) *Rights of mortgagee, lender, or Secretary.* In the event of any act or failure to act which gives the mortgagee the right to foreclose the mortgage or the lender the right to mature the loan, any of these events being herein called defaults, the rights of the mortgagee, the lender, and the Secretary are as prescribed in section 1105(a) of the Act.

(b) *Assignment to Secretary.* In the event an assignment of the mortgage or note and of the obligations securing the mortgage or note shall be tendered to the Secretary in accordance with section 1105(a) of the Act, the assignment shall be as approved by the Secretary and annexed to the contract of insurance and such other documents as may be required by the Secretary, and shall be duly executed by or on behalf of the lender. Such assignment shall include the assignment to the Secretary of all collateral or security for the mortgage or loan and all policies of insurance held by the lender pursuant to the mortgage or loan agreement.

(c) *After assignment.* In the event the Secretary shall accept an assignment of a mortgage or loan agreement and the obligation or obligations secured by the same, upon default of the borrower, the Secretary may take any action authorized by sections 1105(c) and 1105(d) of the Act and any action authorized, permitted by, or provided for in the mortgage or loan agreement.

Note: Also see Commercial Fisheries Review, April 1959, p. 98.

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TRANSFER OF FISH AND WILDLIFE MANAGEMENT TO ALASKA APPROVED:

Secretary of the Interior Fred A. Seaton took action on April 27 to assure transfer of the administration and management of fish and wildlife resources in Alaska to the new State.

In letters to Congress, Secretary Seaton certified, in the language of the Statehood Act, that the Alaska State Legislature has made "adequate provision for the administration, management, and conservation of the fish and wildlife resources of Alaska in the broad national interest."

The Alaska Statehood Act provided that this responsibility would be retained by the Federal Government until the first day of the calendar year following expiration of 90 legislative days after the Secretary's certification. The transfer will, therefore, be effective January 1, 1960, unless Congress adjourns before the 90-legislative-day period expires.

On March 2, Secretary Seaton wrote Acting Governor Hugh Wade, setting forth in detail some factors which he believed necessary to be adequately considered in formulating a fish and wildlife program for Alaska, in the broad national interest.

On April 23, he received Alaska House Bill No. 201, and other pertinent legislation of the Alaska Legislature.

In certifying the adequacy of the proposed programs, Secretary Seaton noted that the Department did not regard them as "ideal." He said he was "disappointed" with some provisions of the legislation.

The text of the Secretary's letter to Congress and to Acting Governor Wade follow:

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Washington 25, D. C.

March 2, 1959

Dear Governor Wade:

This is in further reply to your telegram of February 5, 1959, requesting my views and assistance on fish and wildlife matters pertaining to Alaska.

We have given considerable study to the so-called Pelly-Westland amendment to section 6(e) of the Statehood Act (Act of July 7, 1958, 72 Stat. 339, 340). The amendment provides in pertinent part:

> "*** the administration and management of the fish and wildlife resources*** shall be retained by the Federal Government*** until*** the Secretary of the Interior certifies to the Congress that the Alaska State Legislature has made adequate provision for the administration, management, and conservation of said resources in the broad national interest." (Emphasis supplied.)

This particular proviso was added to section 6(e) of H. R. 7999 by means of an amendment offered from the floor of the House, without prior hearings having been held thereon and without any consideration having been given to it by the Committee. Thus, all of the legislative history on the amendment is contained in the debate which took place during the consideration of the bill by the House. The only directives that the Congress gave to the people of Alaska and their elected representatives and to me are those contained in the amendment itself and the debate concerning it. This debate is to be found in the Congressional Record on pages 8411, 8412 (May 23, 1958), 8489-8491 (May 26, 1958), and 8738-8741 (May 28, 1958), and is our only means of ascertaining the purpose of the Congress in this matter.

In view of the foregoing, I have concluded, and I am sure you will agree, that the Congress expects that the Alaska Legislature and you will provide the legislative framework for carrying out a sound and efficient long-range program for the administration, management, and conservation of these immensely valuable resources in the broad national interest. Naturally the primary responsibility for such a program must rest with you as the Chief Executive and with the Legislature.

In developing such a program, there are various factors which you and the Legislature will probably wish to consider. The following are matters which, in my opinion, should be considered in formulating such a program:

Review of Existing Law and Regulations

Many Alaska officials are familiar with the laws and with the rules and regulations under which the Department of the Interior administers the fish and wildlife resources of Alaska. These should be carefully reviewed, and a determination should be made as to which laws and regulations should be continued under State administration, which should be changed or modified, and which might be considered unsuitable, obsolete, or unnecessary for inclusion in a State game code.

Experience of other Coastal and Big Game States

While we recognize that the fish and wildlife problems of Alaska are in large measure unique, a review and evaluation of the conservation laws of other States of the Union, particularly coastal States having substantial fisheries and the big game States of the West, should be of material assistance.

Staffing

The availability and effectiveness of the States' personnel in terms of numbers, professional qualifications, and stature must be considered. Thus, adequate provision must be made for a well-trained staff of career civil service officers and employees familiar with conditions in Alaska, who can administer and supervise the program, enforce rules and regulations, and perform the research which is necessary for the conservation of the resources.

Financing

Sufficient funds must be available to provide for sound administration and to prevent the wasting of the resources. Thus, provision must be made for adequate funds so that money will be available to carry out the responsibilities imposed on or assumed by the State.

Form of Management Organization

Conservation of the fish and wildlife resources is a never-ending program, and as such consideration must be given to the conservation and management of each and every phase of the resource and every square mile of the area which the program covers. Thus, provision must be made for an organization which will adequately provide for continuity, especially in the making of policies pertaining to such matters as the management and conservation of the resource, staffing and promotions, and use of career personnel. The organization should provide for bipartisan representation from the different areas within the State. Further, the policy-making officials should be selected for their ability and their dedicated interest in the resource, and no identification should be made between a policy-making official and any particular segment of the population; likewise, no official should be bound to represent the interests of a specific geographical section. Provision should be made so that the organization would have regulatory and budgetary control.

Sanctions

Conservation of the resource cannot be effectuated without an organization which is free, procedurally, to act quickly and effectively in the issuing and amending of rules and regulations, the making of arrests, and the pressing of adequate civil and criminal penalties for violations of rules, regulations, and statutes designed to assure conservation of the resource.

General Provisions

Such a program should include provisions relating to search and seizure; authority to enter into cooperative programs for education, research, and predator and rodent control; authority to acquire land and water for such purposes as refuges, public hunting, access, and facilities to carry out programs in the pollution field, including control, research, and establishment of standards; and authority to receive funds from sources other than State revenues. In this last category, careful consideration should be given the requirements necessary to make your State eligible to receive grants under the Wildlife Restoration Act (16 U.S.C., sec. 669 et seq.) and the Fish Restoration Act (16 U.S.C., sec. 777 et seq.)

In setting forth my suggestions as to the factors which you and the Legislature may wish to consider, I do not wish to imply that I will necessarily use them as guidelines to measure the action taken by the Legislature against the requirements of section 6(e). From our experience in the Department of the Interior, however, these factors would ordinarily be considered in judging the adequacy of a State conservation program. Consequently, before making a certification to the Congress, I should like to have your assurance that these factors, together with the comments set forth in the debate on the Statehood bill in the House, as well as any other matters you consider appropriate, have been fully considered and weighted in determining the program and plan the State of Alaska has elected to follow.

In preparing for and effecting the transfer of the administration and management of Alaska's fish and wildlife resources from the Department of the Interior to the new State government, I wish to assure you of the full cooperation of the Department and especially of the administrative and technical personnel of its Fish and Wildlife Service. We wish to be of all possible help to you in undertaking this momentous task.

I am of the opinion that this letter satisfies fully your needs at this time. However, if you believe that you require further assistance, I am quite willing to send Mr. William Redmond of our Solicitor's office to Juneau at once for the purpose of drafting such implementing legislation as you may wish.

Sincerely,

(Sgd) Fred A. Seaton
Secretary of the Interior

The Honorable Hugh J. Wade
Acting Governor of Alaska
Juneau, Alaska

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UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Washington 25, D. C.

April 27, 1959

Dear Mr. Speaker:

Public Law 85-508, the Alaska Statehood Act, contained the following provision in section 6(e):

"Provided, That the administration and management of the fish and wildlife resources of Alaska shall be retained by the Federal Government under existing laws until the first day of the first calendar year following the expiration of ninety legislative days after the Secretary of the Interior certifies to the Congress that the Alaska State legislature has made adequate provision for the administration, management, and conservation of said resources in the broad national interest."

In connection with the consideration of this matter, on March 2, 1959, I wrote Acting Governor Hugh Wade, setting forth in detail some factors which in my opinion were necessary to be adequately considered in formulating a fish and wildlife program for Alaska in the broad national interest. A copy of that letter is enclosed.

On April 9, 1959, the Legislature of the State of Alaska enacted House Bill No. 201 entitled "An Act relating to the fish and game resources of Alaska; providing for a Department of Fish and Game and its organizational structure; providing a code of laws relating to fish and game; providing for licensing and prescribing fees thereof; providing penalties for violations; repealing certain laws relating to the fish and game resources of the State; and providing for an effective date." On April 23 I received Alaska House Bill No. 201 and other pertinent legislation of the Alaska legislature from the Acting Governor by way of Senators Bartlett and Gruening and Congressman Rivers of Alaska. A copy of his transmittal letter is also enclosed.

We have reviewed the representations made to me in the letter of April 17 from Acting Governor Wade and the provisions of the Alaska legislation submitted to me by him. While we are disappointed with certain aspects of the legislation and regard it as short of ideal, P. L. 85-508, as I understand it, permits me to apply only a test of adequacy. Therefore, in accordance with the duty imposed upon me, I hereby certify that the Alaska State Legislature has made adequate provision for the administration, management, and conservation of the fish and wildlife resources of Alaska in the broad national interest.

Sincerely,

(Sgd) Fred A. Seaton
Secretary of the Interior

The Honorable Sam Rayburn
Speaker of the House
of Representatives
Washington 25, D. C.

Enclosures

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REGULATIONS CLOSE BRISTOL BAY, ALASKA, TO COMMERCIAL RED SALMON FISHING:

Regulations formally closing the Bristol Bay, Alaska, commercial red salmon fishery were signed April 24 by Secretary of the Interior Fred A. Seaton. Four great river systems of Alaska, each having a traditional major salmon run, flow into Bristol Bay. Salmon from Bristol Bay migrate to the high seas of the North Pacific Ocean.

Under a convention signed at Tokyo on May 9, 1952, there was established a Provisional Abstention Line at 175° west longitude, east of which the Japanese agreed not to fish. Scientific evidence available to the United States since 1952 has revealed that Bristol Bay salmon migrate west of the Abstention Line. And Japanese high-seas fishing operations have fished extensively in some years in the area of heavy intermingling of Asian and Bristol Bay salmon between 170° east longitude and the Abstention Line at 175° west longitude.

Because of expected small salmon runs in Bristol Bay this year, which could not withstand even a limited domestic fishery on the scale of 1958, in addition to the expected Japanese operations west of the Abstention Line, Secretary Seaton announced on March 13 that the Department was contemplating action to close Bristol Bay.

The Department of State and the Department of the Interior have worked closely together in conferring with representatives of the Japanese government in an attempt to work out a solution to the high-seas problem. However, these discussions have not resulted in an arrangement which we consider would permit United States fishermen to carry on commercial fishing operations in Bristol Bay.

Secretary Seaton stated that: "Under the circumstances, and upon the basis of advice received from our Bureau of Commercial Fisheries, it is imperative that we prescribe a general closure on red salmon fishing during the coming season to allow escapement of brood stock to the spawning grounds. There is no alternative. This is the only way available to insure that there will be Bristol Bay red salmon runs in the future."

The regulations permit a subsistence-type fishery that will at least partially alleviate the hardship to the resident population of Bristol Bay, where salmon fishing is virtually the sole means of livelihood.

In the Nushagak District, which normally accounts for about 12 percent of the Bristol Bay salmon pack, the run is expected to be relatively stronger than in other sections of the area. Here a very limited subsistence-type red

salmon fishery is provided by the new regulations.

The length of the weekly fishing period will be governed by the amount of fishing gear registered for use in the Nushagak District. In the Bristol Bay area generally, commercial fishing for species other than red salmon and personal use salmon fishing by means of set nets are permitted.

Secretary Seaton indicated that further changes in the Bristol Bay regulations may be necessary, dependent upon the extent of the Japanese high-seas fishery in the North Pacific and upon field observations by the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, during the fishing season. The regulations appeared in the Federal Register of April 28.

Department of the Treasury

BUREAU OF CUSTOMS

REGULATION ON LABELLING OF IMPORTED FROZEN FRESH-WATER TROUT:

A new Bureau of Customs regulation requires that imported frozen fresh-water trout packed in an envelope or other closed wrapper in which it will reach the ultimate purchaser shall be marked with the name of the country of origin by means of legible and conspicious marking on the wrapper unless the name of the country of origin can be clearly seen through such wrapper. The regulation became effective on March 1, 1959.

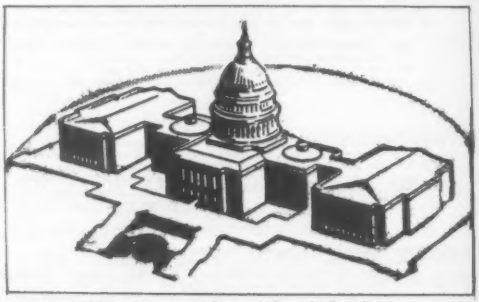
Although the Food and Drug Administration has ruled that it regards wrapped frozen fish as food in package form, which normally would require a net weight statement, the net weight will not be required to be stated on the wrapped imported frozen trout where there is a variation in weight between pieces, provided that the master container bears a correct statement of net weight of the total amount in the box, and provided further that the individually-wrapped fish, when sold to the ultimate purchaser, are weighed and sold by weight.

In addition to the statement of country of origin on the wrapper or envelope, it is recommended that imported frozen trout also be marked: "To be weighed at time of sale."

Eighty-Sixth Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to



committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.

ALASKA FISH AND WILDLIFE RESOURCES: A letter from the Secretary of the Interior (with accompanying papers) was presented to the Senate and House on April 28, certifying, pursuant to law, that the Alaska State Legislature has made adequate provision for the administration, management, and conservation of the fish and wildlife resources of Alaska, in the broad national interest; referred in the Senate to the Committee on Interstate and Foreign Commerce, in the House to the Committee on Merchant Marine and Fisheries.

ALASKA OMNIBUS ACT: The Subcommittee on Territorial and Insular Affairs of the House Committee on Interior and Insular Affairs on May 4 and 5 held hearings on H. R. 6091 and related bills H. R. 6109 and H. R. 6112. Subcommittee on May 11 ordered favorably reported to the full committee H. R. 6091 (amended), Alaska Omnibus Act, to amend certain laws of the United States in light of the admission of Alaska into the Union.

H. R. 7120 (Aspinall), a bill to amend certain laws of the U. S. in light of the admission of the State of Alaska into the Union, and for other purposes; to the Committee on Interior and Insular Affairs; introduced in House May 14. Similar to H. R. 6091 and related bills previously introduced.

The House Committee on Interior and Insular Affairs on May 14 introduced a clean bill, H. R. 7120; and on May 19 ordered favorably reported to the House H. R. 7120 without amendment (H. Rept. No. 369); to the Committee of the Whole House on the State of the Union.

H. R. No. 369, Alaska Omnibus Act (May 19, 1959, 86th Congress, 1st Session, Report of the House Committee on Interior and Insular Affairs together with individual views and comments to accompany H. R. 7120), 65 pp., printed. The report contains major provisions and sectional analysis of the bill, and changes in existing law. The bill includes an amendment to the Statehood Act approved by the Committee which provides for Alaska to assume jurisdiction over fisheries in 90 calendar days instead of 90 legislative days.

The Subcommittee on Territories and Insular Affairs of the Senate Committee on Interior and Insular Affairs on May 7 held and concluded hearings on S. 1541. Testimony was presented by several members of the Congress, representatives from the State of Alaska, and certain Governmental agencies, including the Department of the Interior. The Senate Committee on Interior and Insular Affairs, in executive session, on May 25 ordered favorably reported with amendments S. 1541, to amend certain laws of the U. S. in light of the admission of the State of Alaska into the Union.

The Senate Committee on Interior and Insular Affairs met in executive session on May 22 to consider S. 1541, Alaska Omnibus Bill.

ALASKA SALMON RESOURCES REHABILITATION: Memorial of the Legislative Assembly of the State of Alaska was received and presented to the House on May 11 by Speaker Sam Rayburn. The Memorial urges consideration by the President and the Congress of the United States relative to providing the State of Alaska Department of Fish and Game with annual funds of not less than $5 million per year for not less than 15 years for the rehabilitation of the salmon resources; referred to the Committee on Merchant Marine and Fisheries.

BONNEVILLE REORGANIZATION ACT OF 1959: S. 1927 (Neuberger), a bill to amend the Bonneville Project Act in order to establish the Bonneville Power Corporation; to the Committee on Public Works; introduced in Senate May 13. The proposed legislation would reorganize the Bonneville Power Administration into a Federal corporation to facilitate the orderly conservation and development of the water resources of the Pacific Northwest with no major changes in its relationship to other agencies. Among other purposes, the Corporation will be responsible for carrying out the policies of the Federal Government for the comprehensive multiple-purpose water resources development. Further, the Corporation would endeavor to coordinate its programs with such programs for flood control, navigation improvement, irrigation development, fish and wildlife preservation and propagation, recreation development, pollution control, and protection and improvement of water supplies as shall have been developed by other agencies primarily responsible therefor.

DOGFISH SHARK ERADICATION: H. R. 7243 (Rivers of Alaska), a bill to amend the act providing for a program to eradicate the dogfish shark on the Pacific coast in order to expand such program; to the Committee on Merchant Marine and Fisheries; introduced in House May 19. Similar to S. 1264 and a House bill previously introduced which would extend the program and provide incentive payments to fishermen with respect to whole dogfish shark carcasses and dogfish shark livers.

H. R. 7323 (Pelly), a bill to provide for payment of bounties on dogfish sharks to control the depredations of this species on the fisheries of the United States; to the Committee on Merchant Marine and Fisheries; introduced in House May 21. Similar to S. 1264 and other bills previously introduced which would extend the program and provide incentive payments to fishermen with respect to whole dogfish shark carcasses and dogfish shark livers. Provides that the Secretary of the Interior be authorized to establish coastal areas in which depredations of dogfish sharks occur, and to provide for the payment of bounties for the control of such dogfish sharks in order to aid the rehabilitation of the salmon and other species of coastal fisheries. The bill specifically would expand the present program and would provide payment of a bounty of not in excess of $10 a ton for unlivered dogfish sharks, or not in excess of ten cents a pound for dogfish shark livers.

The Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce on May 22 conducted hearings on S. 1264, to extend and expand the program for the eradication of dogfish shark on the Pacific coast.

FISHERIES ASSISTANCE ACT: The Subcommittee on Fish and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries on April 28, 29, and 30 conducted hearings on H. R. 181, and related bills H. R. 390, H. R. 3053, H. R. 5421, and H. R. 5566, which would provide for assistance to depressed segments of the fishing industry.

FISH HATCHERIES: The Subcommittee on Fish and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries on May 5 held and concluded hearings and on May 12 ordered favorably reported to the full committee without amendment H. R. 2398, a bill to provide for the establishment of a fish hatchery in the northwestern part of the State of Pennsylvania.

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFER: H. R. 7190 (Johnson of Wisconsin), a bill to provide that surplus personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to the Committee on Ways and Means; introduced in House May 18. Provides change in existing laws to include State Fish and Game Departments among State agencies eligible for receipt by transfer of surplus Federal Government property and equipment for use in furthering their wildlife conservation, restoration, and educational objectives.

FISH AND WILDLIFE COOPERATIVE RESEARCH TRAINING UNITS: S. 1781 (Magnuson), a bill to provide for cooperative unit programs of research, education, and demonstration between the

Federal Government of the United States, colleges and universities, the several States and Territories, and private organizations, and for other purposes; to the Committee on Interstate and Foreign Commerce; introduced in Senate April 23. Similar to H. R. 5814 previously introduced. Would authorize the U. S. Fish and Wildlife Service and other agencies of the Department of Interior to enter into cooperative agreements for conducting research, training, and demonstrational programs.

GREAT LAKES BASIN COMPACT: H. R. 333 (Byrnes of Wisconsin), a bill granting the consent of Congress to a Great Lakes Basin Compact, and for other purposes; to the Committee on Foreign Affairs; introduced in House January 7. Provides for cooperative action among the States of the Great Lakes area with provisions existing for the compact to be extended to include neighboring Canadian Provinces. Among other purposes and provisions the action would create an agency of the party states to be known as "The Great Lakes Commission," would promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin. The Commission also would be responsible for recommendations providing for uniformity or effective coordinating action in fishing laws and regulations and cooperative action to eradicate destructive and parasitical forces endangering the fisheries, wildlife, and other water resources, and for other purposes.

Also H. R. 2728 (Bentley), introduced in House on January 19, S. 548 (McNamara and 12 other Senators), introduced in Senate January 20, and H. R. 6359 (Dent), introduced in House April 14; House bills to Committee on Foreign Affairs, Senate bill to Committee on the Judiciary.

The Senate Committee on the Judiciary on April 27 ordered S. 548 favorably reported to the Senate (S. Rept. No. 231).

Senate Report No. 231, Granting the Consent of Congress to a Great Lakes Basin Compact (April 27, 1959, 86th Congress, 1st Session, Report of the Senate Committee on the Judiciary together with individual views to accompany S. 548), 10 pp., printed. The report contains a summary and history of the legislation, and reports from several Federal Agencies.

The Senate on April 29 passed, without amendment and cleared for the House, S. 548.

IMPORTED COMMODITY LABELING: S. 1978 (Smathers), a bill to amend the Tariff Act of 1930 with respect to marking of imported articles and containers; to the Committee on Finance; introduced in Senate May 19. Similar to H. R. 2554 and other bills previously introduced. Provides that imported articles removed from original container by the importer, or by a jobber, distributor, dealer, retailer, or other person, repacked, and offered for sale in the new package, shall be marked to show to the ultimate purchaser in the United States the English name of the country of origin of such article.

INTERIOR DEPARTMENT APPROPRIATIONS: The Subcommittee of the Senate Committee on Appropriations on May 11-21 held hearings on the proposed fiscal 1960 budget estimates for the Department of the Interior, and related agencies. Included are appropriations for the Fish and Wildlife Service and its two Bureaus. Testimony was presented by several Senators, and the Director of the Bureau of Commercial Fisheries, and the Director of the Bureau of Sport Fisheries and Wildlife.

Department of the Interior and Related Agencies Appropriations for 1960 (Hearings before a Subcommittee on Appropriations for use by the House Committee on Appropriations, United States House of Representatives, 86th Congress, 1st Session), 1410 pp., printed. Contains budget estimates and testimony presented by witnesses and representatives of the Department of the Interior and Related Agencies in connection with appropriations for Fiscal Year 1960. Included are funds for the Fish and Wildlife Service and its two Bureaus.

INTERIOR SUPPLEMENTAL APPROPRIATIONS: The Senate Committee on Appropriations on April 18 favorably reported to the Senate H. R. 5916 with amendments (S. Rept. No. 207) making supplemental appropriations for fiscal year ending June 30, 1959, for all departments and agencies of the U. S. Government to cover increased pay costs and for other purposes. Included under the Department of the Interior are funds for the Fish and Wildlife Service and its two Bureaus to cover Pay Act cost increases.

Senate Report No. 207, Second Supplemental Appropriations Bill, 1959 (April 17, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Appropriations to accompany H. R. 5916), 83 pp., printed. Contains supplemental appropriations for all departments and agencies of Government to cover increased pay costs and for other purposes for the fiscal year ending June 30, 1959. Included under the Department of the Interior are funds for the Fish and Wildlife Service and its two Bureaus to cover Pay Act increases.

For the Office of the Commissioner of Fish and Wildlife Service, the Senate Committee allowed $24,300, the same as provided by the House but $2,700 under the budget estimate. For the Bureau of Sport Fisheries and Wildlife, the Committee allowed $850,500--the full amount of the budget estimate, but which the House had reduced by $85,050. For the Bureau of Commercial Fisheries, the Committee allowed the amount of $333,000--the same amount as provided by the House but $37,000 under budget estimates.

The Senate on April 30 passed with amendments H. R. 5916, second supplemental appropriations for fiscal year 1959. The Senate insisted on its amendments, asked for conference with the House, and appointed conferees.

Second Supplemental Appropriation Bill for 1959 (Hearings before the Special Subcommittee on Deficiencies for use by the House Committee on Appropriations, United States House of Representatives, 86th Congress, 1st Session), 100 pp., printed. Contains budget estimates and testimony presented for the Legislative Branch, the Judiciary, the District of Columbia, and various departments and agencies of the Executive Branch of Government to meet deficiency items and increased pay costs for fiscal year ending June 30, 1959. Included under the Department of the Interior are

funds requested by the Fish and Wildlife Service and its two Bureaus.

Second Supplemental Appropriation Bill for 1959 (Hearings before the Committee on Appropriations, United States Senate, 86th Congress, 1st Session, on H. R. 5916, an act making supplemental Appropriations for the Fiscal Year Ending June 30, 1959, and for other purposes), 1210 pp., printed. Contains budget estimates and testimony presented for all departments and agencies of Government to cover increased pay costs and meet deficiency items and for other purposes. Included are tables which reflect the budget estimates and the amounts allowed by the House on all items, including a table which gives an analysis of the increased pay costs. Included under the Department of the Interior are funds for the Fish and Wildlife Service and its two Bureaus.

Senate and House conferees on May 13 filed conference report (H. Rept. 355) on H. R. 5916.

The Senate and the House on May 14 voted to adopt the conference report (H. Rept. 355) filed by the Conferees of the Joint Committee on H. R. 5916, clearing the bill for action by the White House.

House Report No. 355, Second Supplemental Appropriation Bill, 1959 (March 13, 1959, 86th Congress, 1st Session, Conference Report of the Joint Senate and House Committee of Conferees to accompany H. R. 5916), 27 pp., printed. Contains supplemental appropriations for all departments and agencies of Government to cover pay cost increases, and for other purposes for the fiscal year ending June 30, 1959. Included are funds for the Fish and Wildlife Service and its two Bureaus to cover Pay Act increases.

For the Office of the Commissioner of Fish and Wildlife Service, the Joint Committee allowed $24,300, the same as provided by the House and Senate but $2,700 under the budget estimate. For the Bureau of Sport Fisheries and Wildlife, the Committee allowed $807,550--an increase of $42,100 over the amount originally provided by the House, but $42,950 under the amount provided by the Senate and requested in budget estimates. For the Bureau of Commercial Fisheries, the Committee allowed the amount of $333,000--the same as provided by the House and Senate but $37,000 under budget estimates.

House agreed to conference report May 14 and house receded and concurred on certain amendments. Senate agreed to conference report May 14. Senate agreed to certain House amendments to Senate amendments on same date and bill cleared for President.

The President on May 20, 1959, signed into law H. R. 5916, second supplemental appropriations for fiscal year 1959 (P. L. 86-30).

INTERSTATE TRANSPORTATION OF FISH: The Subcommittee on Fish and Wildlife Conservation, of the House Committee on Merchant Marine and Fisheries, on May 5 held and concluded hearings and on May 12 ordered favorably reported to the full committee without amendment H. R. 5854, a bill to clarify a provision in the Black Bass Act relating to the interstate transportation of fish, and for other purposes.

H. R. 7186 (Foley), a bill to clarify a provision in the Black Bass Act relating to the interstate transportation of fish, and for other purposes; to the Committee on Merchant Marine and Fisheries; introduced in House May 18. Similar to S. 1391 previously introduced. Provides for the shipment of fish or fish eggs in interstate commerce for breeding or stocking purposes if they are caught, sold, purchased, or transported in accordance with the laws of the state in which taken.

MARINE GAME FISH RESEARCH: H. R. 6753 (Miller), a bill authorizing and directing the Secretary of the Interior to undertake continuing research on the biology, fluctuations, status, and statistics of the migratory marine species of game fish of the United States and contiguous waters; to the Committee on Merchant Marine and Fisheries; introduced in House April 28. Similar to H. R. 5004 and related bills previously introduced which would provide for marine game fish studies and research.

MARINE LABORATORY IN FLORIDA: The Subcommittee on Fish and Wildlife Conservation, of the House Committee on Merchant Marine and Fisheries, on May 5 conducted and concluded hearings and in executive session on May 12 ordered favorably reported to the full committee without amendment H. R. 350, a bill to provide for the construction of a Fish and Wildlife marine laboratory in the central Gulf coast area of Florida.

OCEANOGRAPHY EDUCATIONAL ASSISTANCE: H. R. 6298 (Brooks of Louisiana), a bill to amend the National Science Foundation Act of 1950 to provide financial assistance to educational institutions for the development of teaching facilities in the field of oceanography, and to provide fellowships for graduate study in such field; to the Committee on Science and Astronautics; introduced in House April 13. Would provide for grants to accredited nonprofit institutions of higher education to assist them in carrying out programs for the acquisition and development of facilities for the teaching of oceanography. Further and in order to assist in meeting the need for increased numbers of qualified oceanographers, would provide funds to award graduate fellowships for study in the field of oceanography. The authorized amounts to be appropriated for any fiscal year would not exceed $500,000 for grants and not more than $300,000 for graduate fellowship awards.

POWER PROJECTS FISHERIES RESOURCES PROTECTION: House Joint Memorial of the Legislative Assembly of the State of Oregon to the President and Congress of the United States was presented in the Senate by Senator Morse on April 15. The Memorial urges that additional Federal appropriations may be made available through the Department of Defense or the Department of the Interior to facilitate planning for the passage of fish and planning for hydroelectric dams in the rivers of the Pacific Northwest; referred to the Committee on Appropriations.

S. Con. Res. 35 (Magnuson and 6 other Senators), a concurrent resolution expressing the sense of the Congress that the Secretary of the Interior should immediately undertake an intensified research program, dealing with the upstream and downstream passage of salmon on the Columbia River and its tributaries; to the Committee on Interstate

and Foreign Commerce; introduced in Senate May 13, 1959. Excerpts from the remarks made by Senator Magnuson with reference to the concurrent resolution follow:

"To finance this program additional funds will be required. The Department currently has full authority to undertake such research. The problem is money.

"The concurrent resolution expresses the sense of the Congress that such funds should be provided by the respective Appropriations Committee substantially in accordance with a report entitled 'A Priority Research Program for Fish and Dams in the Columbia River Basin,' which was submitted to the Columbia Basin Inter-Agency Committee by its Fisheries Subcommittee on February 11, 1959.

"The February 11 report recommends a 3-year crash program, calling for the expenditure of $700,000 the first year and $1 million for each of the two following years. . . .

"The concurrent resolution further declares it to be the sense of the Congress that while this study is in progress, the Federal Power Commission should not license any projects in the so-called Middle Snake Basin until the Secretary makes his final report to the Congress on the success of this intensified research effort. Approximately 80 percent of certain salmon runs are produced in the Salmon River--which is a part of the Middle Snake River Basin.

"It is possible that our scientists could make a major breakthrough within a year or even 2 years, if this effort gets under way. If such should be the case and the Secretary of the Interior so reports to the Congress, the concurrent resolution would become inoperable. With good luck and good planning, therefore, we might come up with a permanent solution to the running controversy that has existed between builders of dams and the conservation of fish. . . ."

PRICE DISCRIMINATION ENFORCEMENT OF ORDERS: The Antitrust Subcommittee of the House Committee on the Judiciary conducted hearings May 27-28 on S. 726 and related bills, to amend section 11 of the Clayton Act, to provide for the more expeditious enforcement of cease and desist orders issued thereunder, and for other purposes.

PUERTO RICO STATEHOOD: H. R. 7003 (Anfuso), a bill to provide for a referendum in Puerto Rico on the admission of Puerto Rico into the Union as a State, and to establish the procedure for such admission if the people of Puerto Rico desire it; to the Committee on Interior and Insular Affairs; introduced in House May 7.

PUERTO RICO AND UNITED STATES COMPACT AMENDMENTS: S. 2023 (Murray), a bill to provide for amendments to the compact between the people of Puerto Rico and the United States; to the Committee on Interior and Insular Affairs; introduced in Senate May 21. The proposed amendments are largely technical in order to eliminate inappropriate provisions, and to clarify, develop, and perfect the terms of existing law so as to achieve better fulfillment of purpose and strengthen the compact.

SALMON IMPORT RESTRICTIONS: The Merchant Marine Subcommittee of the Senate Committee on Interstate and Foreign Commerce on May 4-5 held and concluded hearings on S. 502, to prohibit importation into the U. S. of salmon caught on the high seas in nets. Testimony favoring the bill was heard from Donald L. McKernan, Director, Bureau of Commercial Fisheries, Department of the Interior; and Mal Xavier, National Fisheries Institute of Washington. Testimony in opposition to the bill was heard from a representative of the American Seafood Distributors Association. Subcommittee also heard testimony, in executive hearings, from representatives of the Department of State.

The Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries on May 14 held hearings on H. R. 4293, to prohibit importation into the United States of salmon caught on the high seas in nets. Testimony was presented by Representatives Pelly, Westland, Magnuson, and other Government witnesses.

SALT-WATER RESEARCH LABORATORY: The Subcommittee on Fish and Wildlife Conservation, of the House Committee on Merchant Marine and Fisheries, on May 5 held and concluded hearings and on May 12 ordered favorably reported to the full committee without amendment H. R. 4402, a bill to provide for the construction of a salt-water research laboratory at Seattle, Wash.

SHIP MORTGAGE INSURANCE AMENDMENTS OF 1959: The Senate Committee on Interstate and Foreign Commerce on April 22 ordered favorably reported to the Senate S. 1434 as amended (S. Rept. No. 216), to amend the Merchant Marine Act with respect to insurance of ship mortgages. Provides for a new section which would permit the prospective owner of a vessel to delay placing a mortgage on the vessel until some time after it has been delivered by the shipbuilder, without losing privilege of having the mortgage insured by the Secretary of Commerce. The purpose of the new section is to permit the prospective owner to save interest, and to reduce the period of time during which the Secretary of Commerce is under risk with respect to the mortgage.

Senate Report No. 216, Amendment to the Merchant Marine Act with Respect to Insurance of Ship Mortgages (April 22, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Interstate and Foreign Commerce together with individual views to accompany S. 1434), 12 pp., printed. Committee's report, which is favorable, discusses the effect of the bill, summarizes recommendations of several Government departments, presents the reports of those departments, and points out changes in existing law. Provides amendment to existing law so as to allow deferment in placing mortgages on vessels until some time after delivery by the builder so as to get the best possible interest rate, yet still retain the right to be eligible for mortgage insurance. At the same time there would be no increase of Government risk or need for additional Federal expenditure under the legislation. What this means is that at a later date a vessel owner who used his own funds to build a vessel could place a mortgage on the vessel already built and apply the resulting funds to the building, rebuilding, or reconditioning of another vessel.

The Senate on May 11 passed with amendments S. 1434, to amend the Merchant Marine Act with respect to insurance of ship mortgage.

SHRIMP CONSERVATION CONVENTION WITH CUBA: The convention between the United States of America and Cuba for the conservation of shrimp, signed at Habana, Cuba, on August 15, 1958, and which was transmitted on March 5, 1959, to the Senate by the President of the United States for ratification together with a report of the Acting Secretary of State, was favorably reported to the Senate on May 5 by the Committee on Foreign Relations, without reservation (Exec. Rept. No. 3).

SMALL BUSINESS ACT AMENDMENTS OF 1959: A letter from the Administrator, Small Business Administration, was presented to the House and to the Senate on April 30, 1959, transmitting a draft of proposed legislation to amend the Small Business Act, and for other purposes (with accompanying papers); referred to the respective Senate and House Committees on Banking and Currency.

SMALL BUSINESS INVESTMENT ACT OF 1958: Subcommittee No. 1 of the Select Committee on Small Business held hearings May 11-13 on the administration by the Small Business Administration of the Small Business Investment Act of 1958.

SMALL BUSINESS CAPITAL BANK SYSTEM: H. R. 6594 (Patman), a bill to create a Small Business Capital Bank System, under the supervision of the Small Business Administration, to increase the availability to small business of equity and long-term capital where such capital is not available on reasonable terms from existing sources, and for other purposes; to the Committee on Banking and Currency; introduced in House April 23.

SMALL BUSINESS TAX RELIEF: H. R. 6459 (Chamberlain), a bill to provide a minimum initial program of tax relief for small business and for persons engaged in small business; introduced in House April 16; also H. R. 6501 (McCulloch), H. R. 6502 (Moore), H. R. 6503 (Avery), H. R. 6504 (Smith of California), H. R. 6505 (Robison), H. R. 6506 (Quie), all introduced in House April 20; H. R. 6771 (Cederberg) introduced in House April 29, and H. R. 6941 (Roosevelt) introduced in House May 6; all to the Committee on Ways and Means. Similar to H. R. 2 and other related bills previously introduced which provide for tax adjustment in the interest of small business.

UNEMPLOYMENT RELIEF IN DEPRESSED AREAS: S. 1779 (Byrd of West Virginia), a bill to provide for the encouragement of economic redevelopment; to the Committee on Banking and Currency; introduced in Senate April 23. Similar to H. R. 71 and other bills previously introduced which provide for economic aid, redevelopment assistance, and unemployment relief to depressed areas.

The House Committee on Banking and Currency on May 5 held and concluded hearings and ordered favorably reported S. 722 (amended), which was passed by the Senate March 23, to establish an effective program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically depressed areas.

House Report No. 360, Area Redevelopment Act (May 14, 1959, 86th Congress, 1st Session, Report of the House Committee on Banking and Currency together with minority and individual views to accompany S. 722), 72 pp., printed. Contains legislative background, major provisions, cost of the program, differences between the bill as passed by the Senate and the bill as reported in the House, sectional analysis of the bill, and change in existing law. The appendix lists industrial areas that may qualify for assistance and the Counties by States which must be designated as Rural Redevelopment Areas.

WAGES: H. R. 6564 (Dorn of New York), a bill to amend the Fair Labor Standards Act of 1938, as amended, to provide coverage for employees of large enterprises engaged in retail trade or service and of other employers engaged in activities affecting commerce, to increase the minimum wage under the Act to $1.25 an hour, and for other purposes. Also H. R. 7291 (Kasem), introduced in House May 20; both to the Committee on Education and Labor. Similar to H. R. 188 and other bills previously introduced which would amend the Fair Labor Standards Act to extend coverage under the Act, provide for an increase in the minimum hourly wage rate, and for other purposes.

The Subcommittee on Labor of the Senate Committee on Labor and Public Welfare held hearings May 7-8, May 11-15 and May 26-29, on S. 1046, and other related bills proposing amendments to the Fair Labor Standards Act, to increase the minimum hourly wage rate, and for other purposes.

S. 1967 (Prouty), a bill to amend the Fair Labor Standards Act of 1938, as amended; to the Committee on Labor and Public Welfare; introduced in Senate May 15. Similar to H. R. 188 and other bills previously introduced which would extend coverage under the Fair Labor Standards Act, and for other purposes.

The Administration sponsored bill would, among other purposes, extend coverage under the Fair Labor Standards Act by (1) including in the interstate commerce coverage of the law employees who are engaged in the activities of any business enterprise in which the total annual value of incoming merchandise, materials, or supplies moving directly across State lines to its place or places of business is $1 million or more and 100 or more employees are employed by the employer, and (2) exclude from certain minimum wage exemptions contained in the present Act employers of 100 or more workers so as to insure the protection of a minimum wage to employees of these large employers who come within the interstate commerce coverage of the Act either under the present language of the law or under the proposed amendments.

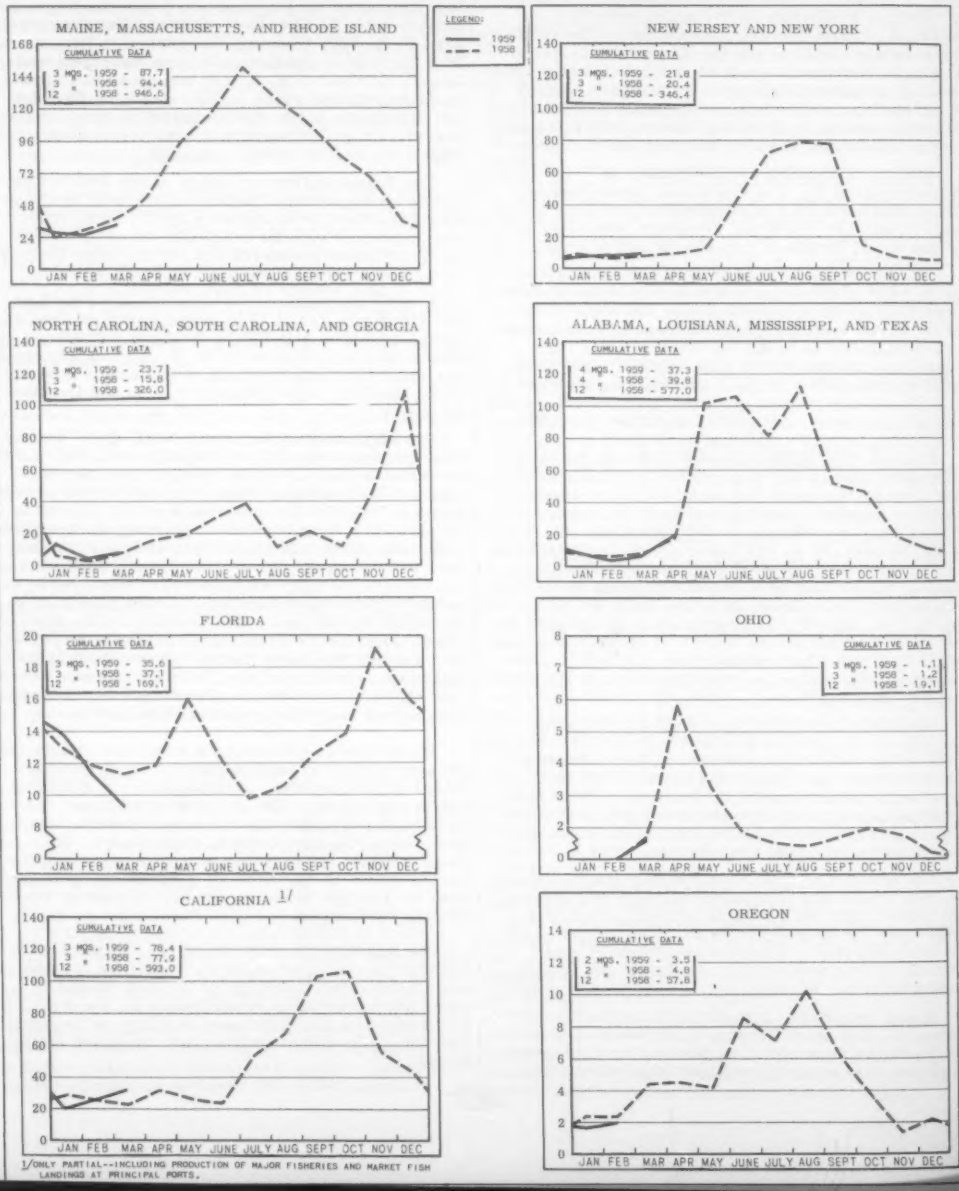
The proposed amendments would not change the present status of employees employed in executive, administrative, professional, or outside sales capacities. The present exemptions for fishermen; for agricultural and irrigation workers; learners, apprentices, messengers, and handicapped workers; for workers on agricultural commodities in the area of production; for seamen on foreign vessels; and for newsboys would remain unchanged.

The Subcommittee on Labor of the Senate Committee on Labor and Public Welfare, which has been conducting hearings on S. 1046 (Kennedy) and other bills proposing amendments to the Fair Labor Standards Act, continued hearings on Tuesday, May 19. The Subcommittee then recessed subject to call.

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

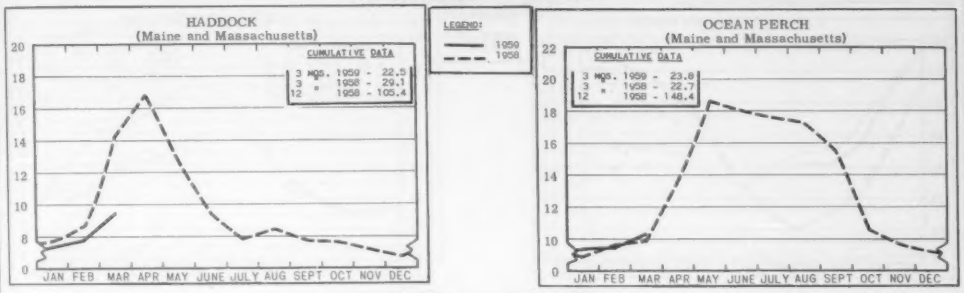
In Millions of Pounds


MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
3 MOS. 1959 - 87.7
3 " 1958 - 94.4
12 " 1958 - 946.6
LEGEND:
1959
1958
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
3 MOS. 1959 - 21.8
3 " 1958 - 20.4
12 " 1958 - 346.4
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
3 MOS. 1959 - 23.7
3 " 1958 - 15.8
12 " 1958 - 326.0
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
4 MOS. 1959 - 37.3
4 " 1958 - 39.8
12 " 1958 - 577.0
FLORIDA
CUMULATIVE DATA
3 MOS. 1959 - 35.6
3 " 1958 - 37.1
12 " 1958 - 169.1
OHIO
CUMULATIVE DATA
3 MOS. 1959 - 1.1
3 " 1958 - 1.2
12 " 1958 - 19.1
CALIFORNIA 1/
CUMULATIVE DATA
3 MOS. 1959 - 78.4
3 " 1958 - 77.9
12 " 1958 - 593.0
OREGON
CUMULATIVE DATA
2 MOS. 1959 - 3.5
2 " 1958 - 4.8
12 " 1958 - 37.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

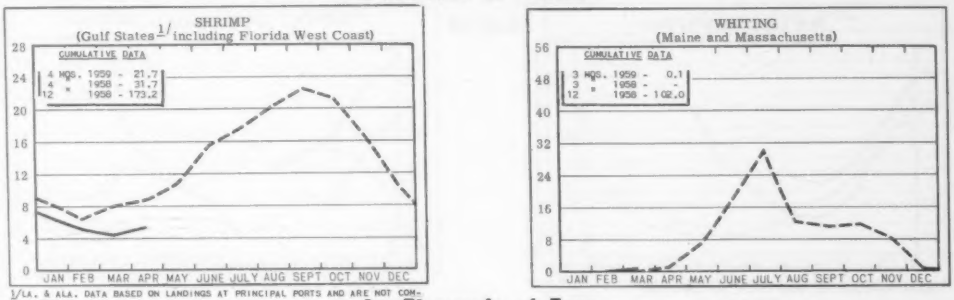
1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

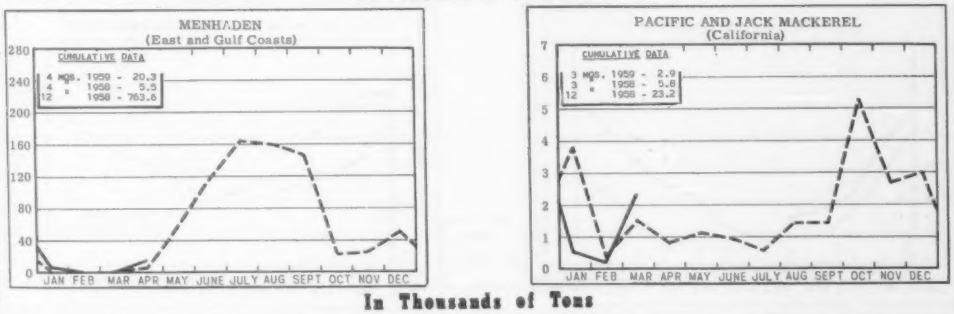


In Millions of Pounds


SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
4 MOS. 1959 - 21.7
4 " 1958 - 31.7
12 " 1958 - 173.2
WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
3 MOS. 1959 - 0.1
3 " 1958 -
12 " 1958 - 102.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
4 MOS. 1959 - 20.3
4 " 1958 - 5.5
12 " 1958 - 763.6
PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
3 MOS. 1959 - 2.9
3 " 1958 - 5.8
12 " 1958 - 23.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons

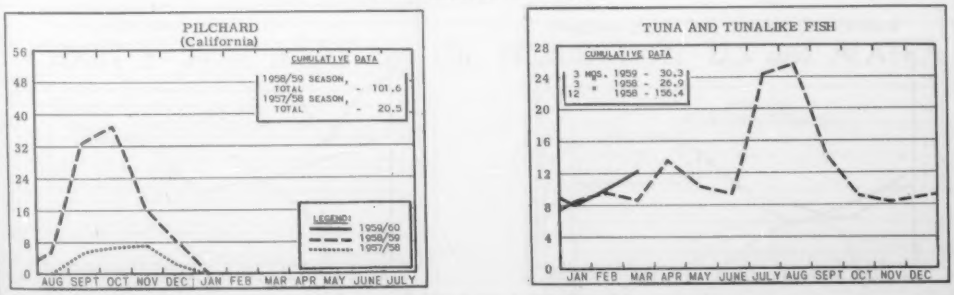
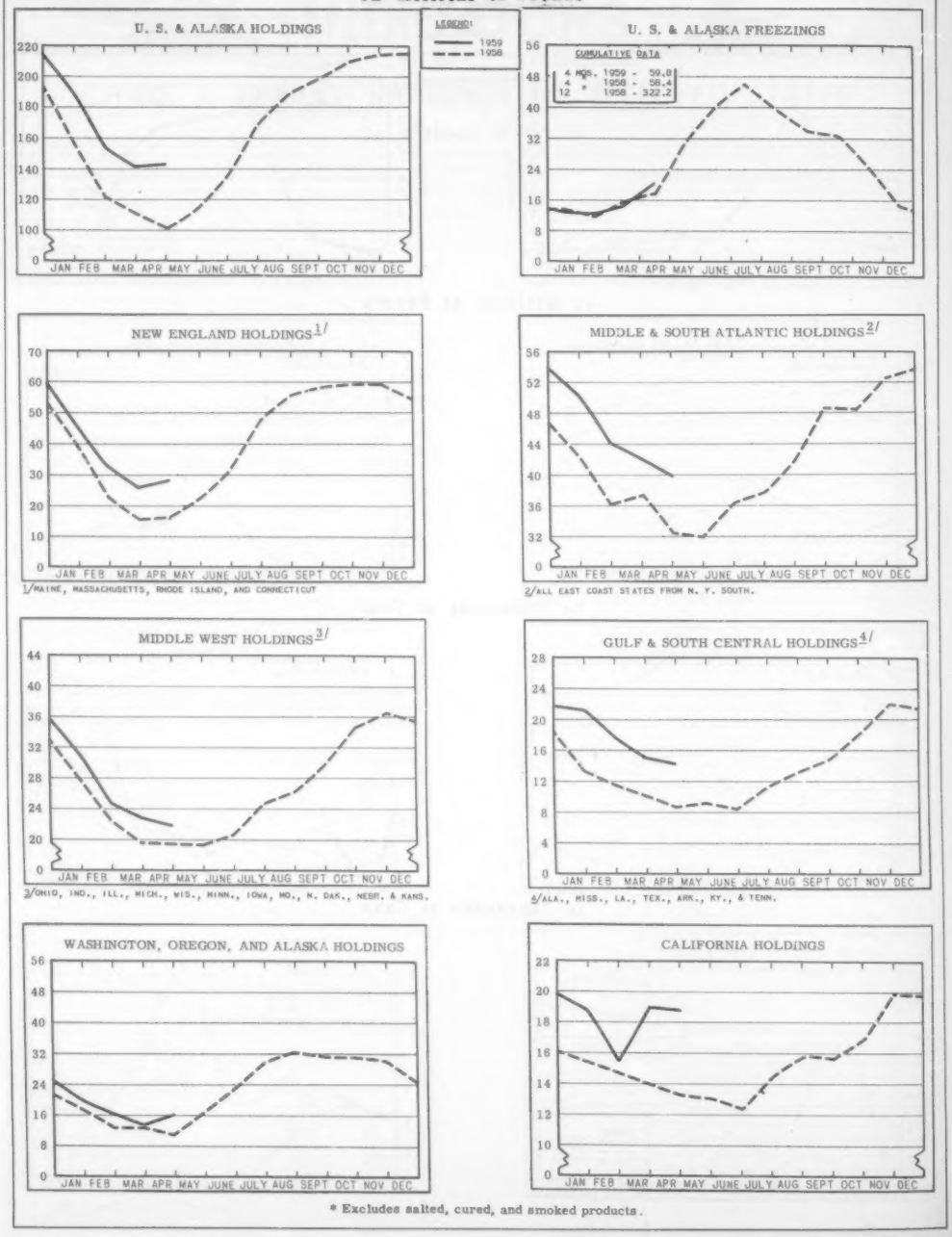


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. & ALASKA HOLDINGS
LEGEND:
1959
1958
U. S. & ALASKA FREEZINGS
CUMULATIVE DATA
4 MOS. 1959 - 59.8
4 " 1958 - 58.4
12 " 1958 - 322.2
NEW ENGLAND HOLDINGS 1/
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
MIDDLE WEST HOLDINGS 3/
GULF & SOUTH CENTRAL HOLDINGS 4/
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT

2/ALL EAST COAST STATES FROM N. Y. SOUTH.

3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.

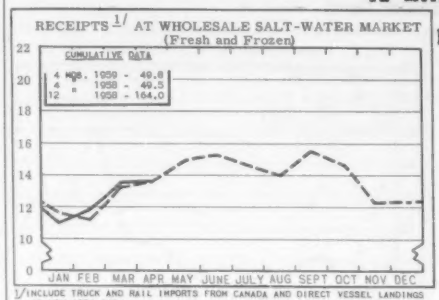
4/ALA., MISS., LA., TEX., ARK., KY., & TENN.

* Excludes salted, cured, and smoked products.

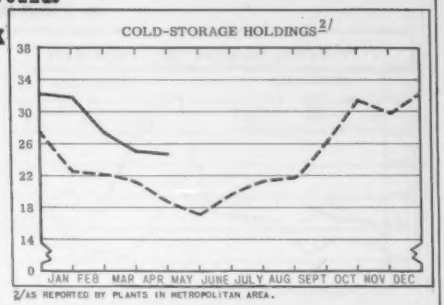
CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

NEW YORK CITY

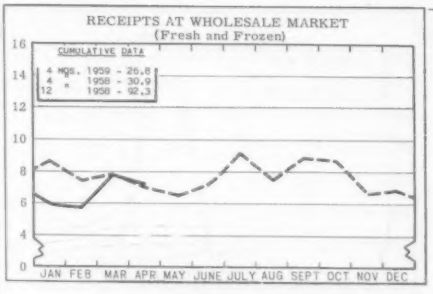

RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1959 - 49.8
4 " 1958 - 49.5
12 " 1958 - 164.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

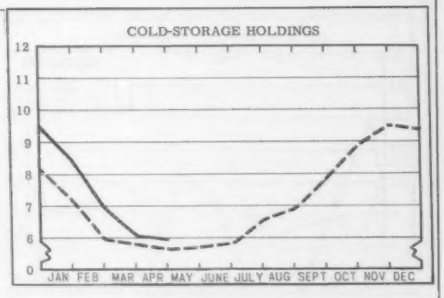
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.



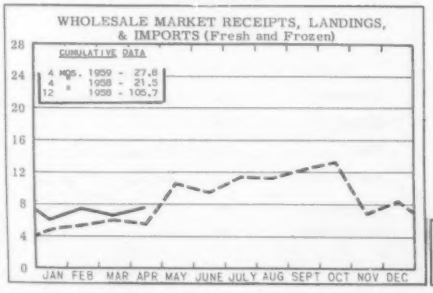
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.

CHICAGO

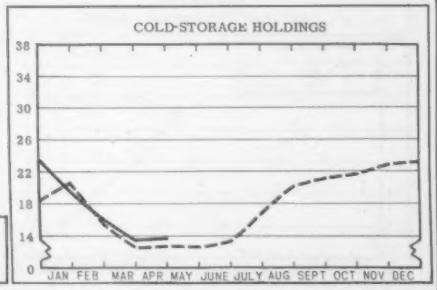

RECEIPTS AT WHOLESALE MARKET
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1959 - 26.8
4 " 1958 - 30.9
12 " 1958 - 92.3
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



SEATTLE


WHOLESALE MARKET RECEIPTS, LANDINGS,
& IMPORTS (Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1959 - 27.8
4 " 1958 - 21.5
12 " 1958 - 105.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

BOSTON



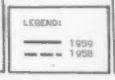
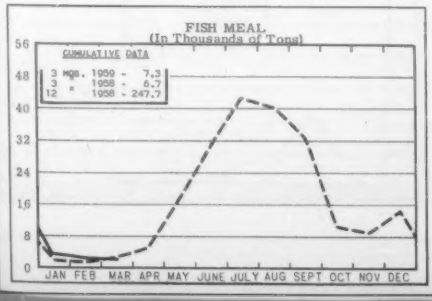


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA


FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
3 MOS. 1959 - 7.3
3 " 1958 - 6.7
12 " 1958 - 247.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

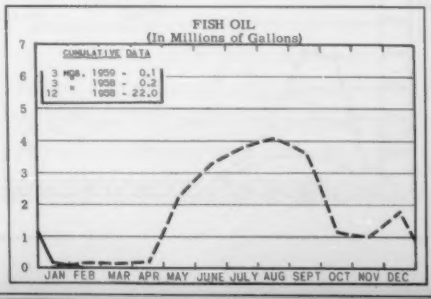
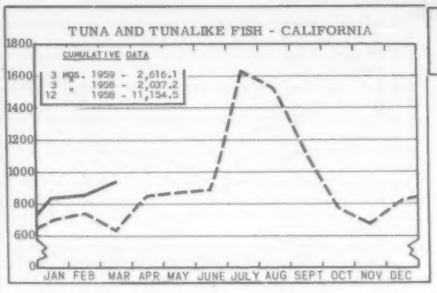
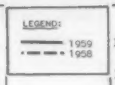
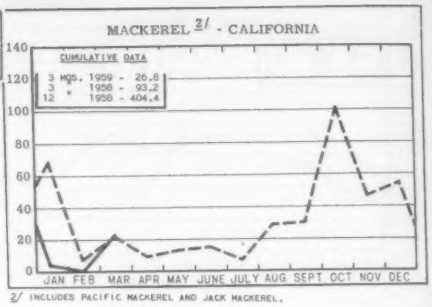

FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
3 MOS. 1959 - 0.1
3 " 1958 - 0.2
12 " 1958 - 22.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

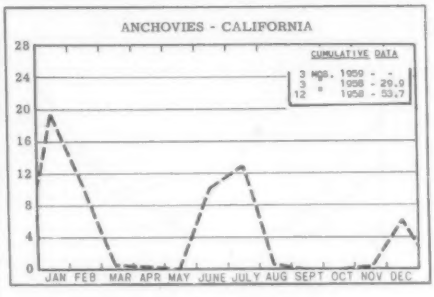
In Thousands of Standard Cases

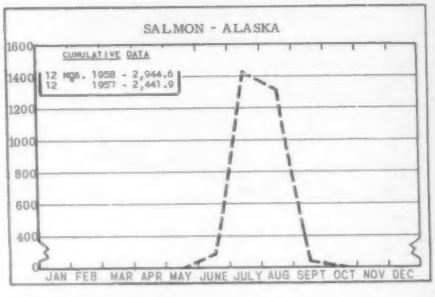


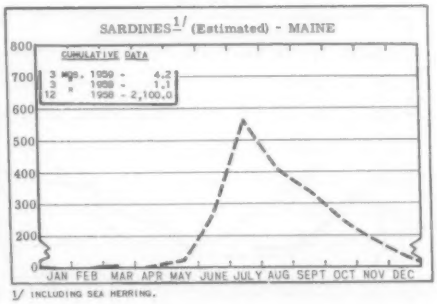




2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



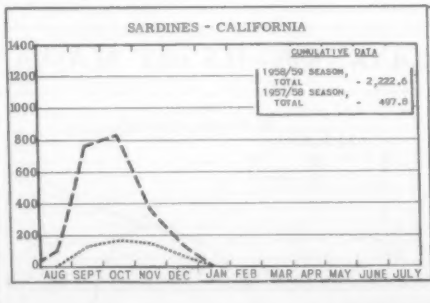


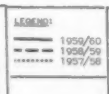


1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.





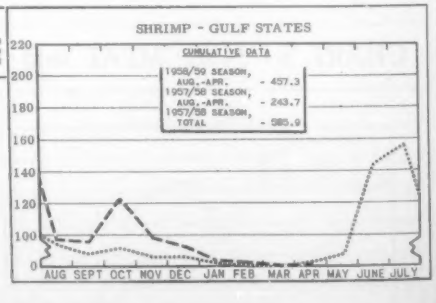
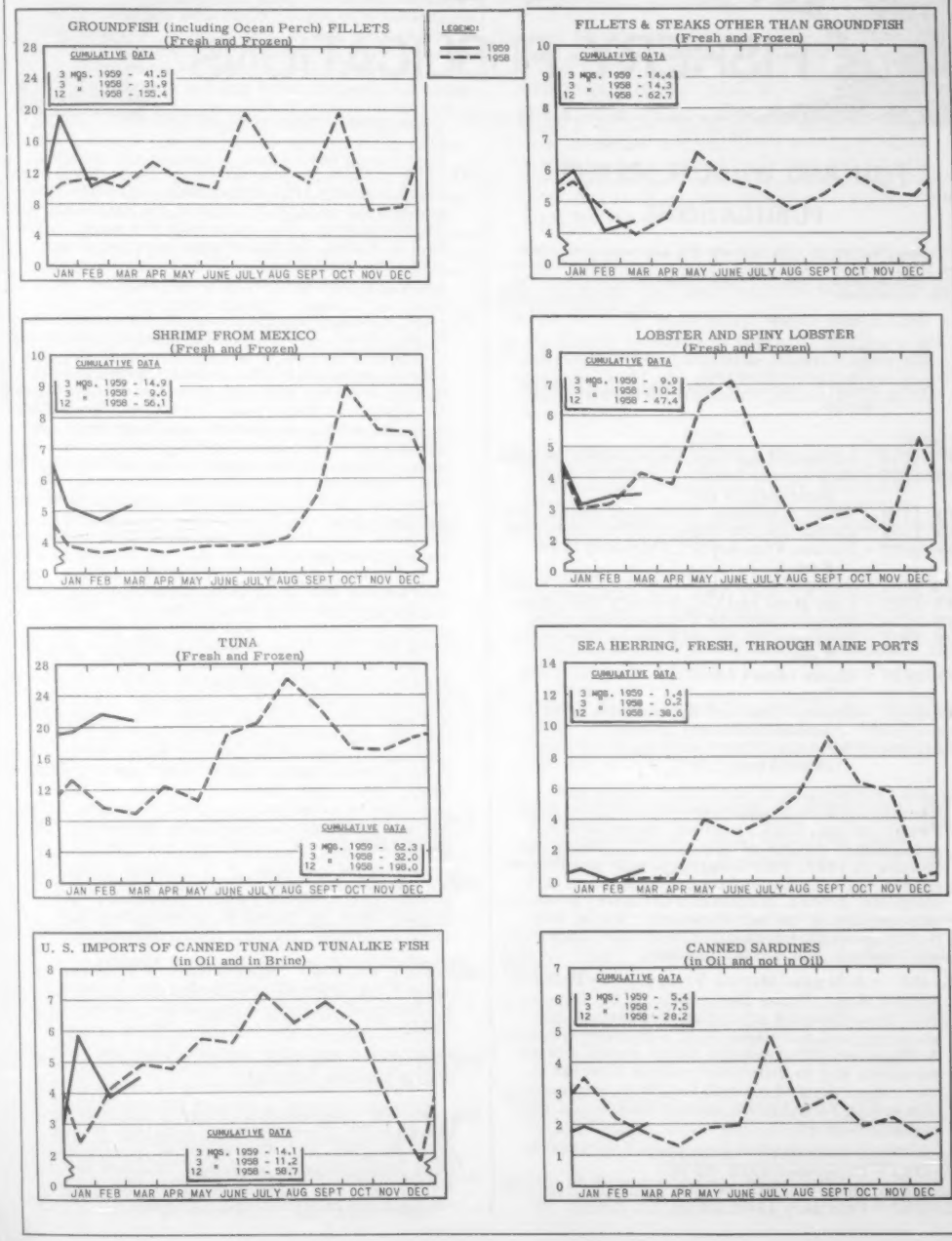
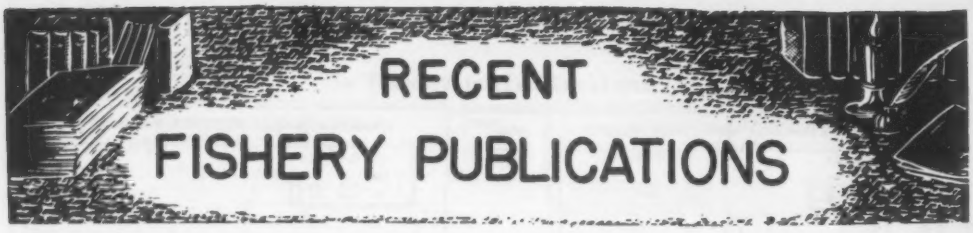


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
3 MOS. 1959 - 41.5
3 " 1958 - 31.9
12 " 1958 - 155.4
LEGEND:
1959
1958
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
3 MOS. 1959 - 14.4
3 " 1958 - 14.3
12 " 1958 - 62.7
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
3 MOS. 1959 - 14.9
3 " 1958 - 9.6
12 " 1958 - 56.1
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
3 MOS. 1959 - 9.9
3 " 1958 - 10.2
12 " 1958 - 47.4
TUNA
(Fresh and Frozen)
CUMULATIVE DATA
3 MOS. 1959 - 62.3
3 " 1958 - 32.0
12 " 1958 - 198.0
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
3 MOS. 1959 - 1.4
3 " 1958 - 0.2
12 " 1958 - 38.6
U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
3 MOS. 1959 - 14.1
3 " 1958 - 11.2
12 " 1958 - 58.7
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
3 MOS. 1959 - 5.4
3 " 1958 - 7.5
12 " 1958 - 28.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS-- CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORT--FISHERIES (LIMITED DISTRIBUTION).
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-1986 - Alabama Landings, December 1958, 2 pp.
CFS-1987 - New Jersey Landings, 1958 Annual Summary, 5 pp.
CFS-1989 - Texas Landings, December 1958, 3 pp.
CFS-1995 - California Landings, October 1958, 4 pp.
CFS-2002 - Frozen Fish Report, February 1959, 8 pp.
CFS-2003 - Georgia Landings, January 1959, 2 pp.
CFS-2005 - Fish Meal and Oil, January 1959, 2 pp.
CFS-2014 - Shrimp Landings, October 1958, 6 pp.
CFS-2016 - Packaged Fish, 1958 Annual Summary, 5 pp.
CFS-2020 - Rhode Island Landings, October 1958, 3 pp.
CFS-2021 - Canned Fish and Byproducts, 1958 Annual Summary, 21 pp.
CFS-2024 - North Carolina Landings, February 1959, 3 pp.

FL-393 - Fisheries of the United States and Alaska, 1958 (A Preliminary Review), by E. A. Power, 61 pp., illus., revised March 1959. A preliminary review of commercial fishery activities in 1958, well illustrated with graphs and charts. In addition to data on production, consumption, prices, manufactured fishery products, and supplies of certain fishery products, this leaflet contains information on fishery imports and exports, and world fisheries.

FL-473 - A Simple Marine Vivarium, by Philip A. Butler, 4 pp., illus., December 1958. The author describes the equipment necessary, the stocking, and maintenance of a marine vivarium. A living exhibit of marine shore animals is an excellent way to stimulate student interest in the interactions of animal and plant communities and to demonstrate many fundamental concepts of biology.

Canned Fish Consumer Purchases:
FL-478a - December 1958, 32 pp.
FL-478b - January 1959, 34 pp.
FL-478c - February 1959, 34 pp.

FL-479 - Eels, by John P. Wise, 4 pp., illus., revised January 1959 (Supersedes FL-127). Describes the natural history of the American and European eels. Not many eels are eaten in the United States, but Europeans have large and profitable fisheries for them and know many ways to prepare delicious dishes from eels.

FL-482 - High-Seas Fisheries of the U. S. S. R. 21 pp., illus., 1959. In describing the status and trends of the U. S. S. R.'s fishing industry, the author states that "The recent expansion of the fishing industry has been directed mainly toward the high-seas fisheries. Traditional Soviet fisheries have been conducted on a large scale in almost all major inland and coastal-marine waters. These waters, however, are believed to be fully exploited; it has also been reported that, in some lake and river fisheries, catches have been declining because of pollution, hydroelectric projects, and other factors. With long coastlines providing access to the rich fishing grounds of the Arctic, Atlantic, and Pacific Oceans, the Soviets are in a most advantageous position for expanding their high-seas fisheries." Developments in the Arctic- and Baltic-based operations and Far Eastern-based operations and descriptions of fishing vessels and equipment, foreign trade, international activities and research, and whaling are presented. Statistics are also included on the catch of fish and shellfish, by selected species, 1948 and 1953-56; marine landings at Arctic and Baltic ports, by fishing areas, 1956; number and type of fishing craft, 1940, 1948, 1953-56; imports of fishery products by principal countries of origin, 1955-57; and whale production in the Antarctic, 1953-54 to 1956-57.

SSR-Fish. No. 252 - Oceanographic Observations in the Central North Pacific, September 1954-August 1955, by James W. McGary and Edward D. Stroup, 261 pp., illus., January 1958.

SSR-Fish. No. 274 - Observations of Moulting Female King Crabs (Paralithodes camtschatica), by Henry M. Sakuda, 9 pp., illus., December 1958.

Sep. No. 548 - The Role of Holding Pounds in the Maine Lobster Industry.

Sep. No. 549 - Research in Service Laboratories (May 1959): Contains these articles--"Technical Note No. 53 - Utilization of Sea Cucumbers (Holothurians) as Food," "Fifteen Months Frozen Storage Possible for Pink Shrimp Investigations in Freezing Gulf Oysters."

Sep. No. 550 - Practical Method of Preventing a Purse-Seine Net from Sinking to Its Full Depth.

Research Facilities of the United States Fishery Laboratory, Beaufort, N. C., by Gerald B. Talbot, Circular 54, 11 pp., illus., printed. In 1900 Congress authorized construction of a permanent biological station on Pivers Island, across the channel from the town of Beaufort. The fishery station was opened for research in its new quarters in 1902 and has been in operation since that time. The author tells of the construction program that was begun in 1949 to modernize this historic marine research center and of the facilities for research which have been added. At the present time, the U. S. Bureau of Commercial Fisheries is conducting research at the fishery laboratory on the cause of fluctuations in abundance of shad, menhaden, striped bass, blue crab, and the methods of controlling and predicting size of populations. These projects are carried out in cooperation with state agencies and extend over the entire Atlantic coast. The radiobiological laboratory is conducting research in cooperation with the Atomic Energy Commission on accumulations of fission products and other radionuclides by marine organisms and the effect of these substances on utilization of seafood resources. Also, the role of trace elements in sea water is being studied in relation to the physiology and metabolism of marine plankton, larger marine invertebrate animals, and fish.

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Products Monthly Summary, February 1959; 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and sardines; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, San Diego, and Eureka areas; California imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; American Tuna Boat Association auction sales; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, February 1959, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

New England Fisheries--Monthly Summary, February 1959, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1959, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Ore.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION, WRITE TO U. S. FISH AND WILDLIFE SERVICE, GULF FISHERY INVESTIGATIONS LIBRARY, GALVESTON, TEX., ABOUT THEM SINCE THAT ORGANIZATION DID THE TRANSLATING.

On the Chalky Deposits in Oysters, by Kojiro Tanaka, Fishery Investigation, Supplementary Report No. 4, 31 pp., processed, translation no. 8. (Imperial Fisheries Experimental Station, Tokyo, Japan.)

The Commercial Shrimp of Cuba (Los Camarones Comerciales de Cuba), Part I, Contribución No. 1 del Centro de Investigaciones Pesqueras (Banco de Fomento Agricola e Industrial de Cuba), by Isabel Perez Farfante, translation no. 15, 16 pp., processed.

The Commercial Shrimp of Cuba (Los Camarones Comerciales de Cuba), Part 2, Contribución No. 6 del Centro de Investigaciones Pesqueras (Banco de Fomento Agricola e Industrial de Cuba), by Isabel Perez Farfante, translation no. 13, 31 pp., processed.

On the Effect of the Concentration of Salt on the Chalky Deposits in Oysters, by Kojiro Tanaka, 3 pp., processed, translation no. 9. (Reprinted from Suisan Kenkyu-shi, Journal of Fisheries, vol. 38, no. 12, 1943, pp. 222-224.)

On the Organic Matter in Oyster Shells (Itabo and Kurochime), by Kojiro Tanaka, 2 pp., processed, translation no. 10. (Reprinted from Suisan Kenkyu-shi, Journal of Fisheries, vol. 38, no. 10, 1943, pp. 186-187.)

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION, WRITE TO U. S. FISH AND WILDLIFE SERVICE, FISHERY BIOLOGICAL LABORATORY, HONOLULU, HAWAII, ABOUT THEM SINCE THAT LABORATORY DID THE TRANSLATING.

Introduction of New Fishing Equipment--A Luminous Bait, by Yoshiaki Ikeda, 2 pp., processed. (Translation of reprint from Tuna Fishing, vol. 50, June 10, 1958, p. 23, Miura City, Japan.)

Report of Investigation of Tuna Long-Line Fishing, 7th Voyage of the IWAKI-MARU, 18 pp., processed, translation. (Fukushima Prefecture Fisheries Experiment Laboratory, Japan.)

Result of Tuna Long-Line Fishing Experiment in the Middle Indian Ocean, by Akiyoshi Kataoka,

8 pp., processed. (Translation of reprint from Journal of the Shimonoseki College of Fisheries, Shimonoseki City, Japan, vol. 8, no. 2, 1957, pp. 241-248.)

Results of Landings Survey on the Tuna, April 1955-March 1956, 135 pp., processed, translation. (Investigative Society of Tuna Fishery, Miura City, Japan.)

Serological Studies of the Races of Tuna (Fundamental Investigations of the Blood Groups of Albacore), by Akimi Suzuki, Y. Shimizu, and T. Morio, 12 pp., processed. (Translation of reprint from Report of the Nankai Regional Fisheries Research Laboratory, Kochi City, Japan, vol. 8, 1958, pp. 105-116.)

Study on Bait for Tuna Long-Line. I. An Artificial Bait of Latex-Sponge Like a Squid, by T. Koyama, 6 pp., processed. (Translation of reprint from Bulletin of the Tokai Regional Fisheries Research Laboratory, Tokyo, Japan, vol. 15, January 1957, pp. 89-94.)

A Study on the Distribution Sea Areas of Yellowfin and Bigeye Tunas, Which Have Different Ovary Maturity, by Shoichi Enokida, 3 pp., processed. (Translation of reprint from Tuna Fishing, vol. 50, June 10, 1958, pp. 19-21, Miura City, Japan.)

MISCELLANEOUS PUBLICATIONS

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ALGAE:

Selected Bibliography on Algae, Nova Scotia Research Foundation No. 4, 109 pp., printed. Nova Scotia Research Foundation, Halifax, Nova Scotia, Canada, 1958.

AQUATIC BIOLOGY:

"Aquatic Biology," by George W. Bennett, article, A Century of Biological Research, Illinois Natural History Survey Bulletin, vol. 27, article 2, December 1958, pp. 163-178, illus., printed. Natural History Survey Division, Urbana, Ill. The author describes the development of research trends and results in aquatic biology, and traces many of the present-day management precepts in Illinois directly to the early investigations. Intensive Illinois investigations since 1938 are chronologically outlined to show the concrete results of accumulative research. The author concludes: "It is probable that within the next few decades great advances will be made in the management of fish populations for sport and commercial uses."

ARMY ENGINEERS:

Bridge Regulations Manual Governing the Operation of Drawbridges Across Navigable Waters of the United States in U. S. Army Engineer District, Los Angeles, L. A. District Manual 1145-2-2, 10 pp., processed; Danger Zone Regulations Manual for Navigable Waters of the United States in U. S. Army Engineer District, Los Angeles, L. A. District Manual 1145-2-3, 14 pp., illus., processed; Navigation Regulations Manual for Navigable Waters of the United States in U. S. Army Engineer District, Los Angeles, L. A. District Manual 1145-2-4, 18 pp., illus., processed; and Anchorage Regulations Manual for Navigable Waters of the United States in U. S. Army Engineer District, Los Angeles, L. A. District Manual 1145-2-5, 44 pp., illus., processed. U. S. Army Engineer District, Los Angeles, Corps of Engineers, 751 South Figueroa St., Los Angeles 17, Calif., January 1, 1959. Regulations prescribed by the Secretary of the Army to govern the navigable waters of the United States in the Los Angeles district.

AUSTRALIA:

"The Shark Fishery of the Bass Straits (Australia)," by J. Bown, World Fishing, vol. 7, July 1958, pp., 54-56, printed. John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, N. W. 1, England.

BIOCHEMISTRY:

Plant Production in the Northern North Sea, by J. H. Steele, Scottish Home Department Marine Research No. 7, 1958, 36 pp., illus., printed, 10s.6d. (about US$1.47). Her Majesty's Stationery Office, 13A Castel St., Edinburgh 2, Scotland. Sampling for temperature, salinity, phosphate, oxygen, chlorophyll, and dry weights formed part of the surveys carried out in the northern North Sea area in 1954-56. This study presents the development of the theoretical model, together with its detailed relevance to certain positions in the area. Then a general chart of the expected values of yearly production is given for the area. In the second part, the results of sampling are discussed and the observed value of production are compared with the theory.

CANADA:

Annual Research Progress Report, 1956-57. Ontario Department of Lands and Forests, Division Research, Toronto, Ontario, Canada, 1958. The section of this book devoted to fisheries was prepared by N. S. Baldwin. Fisheries research projects, he reports, were largely confined to the Great Lakes and inland waters of Algonquin Park. In Lake Ontario the commercial catch sampling was expanded. Records of age, food, and maturity of fish taken were maintained.

The Biology of the Ringed Seal (PHOCA HISPIDA Schreber) in the Eastern Canadian Arctic, by I. McLaren, Bulletin No. 118, 97 pp., illus., printed, C$1. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1958.

British Columbia Catch Statistics, 1958 (By Area and Type of Gear), 155 pp., illus., processed. Department of Fisheries of Canada, 1110 West Georgia St., Vancouver 5, B. C., Canada, February 6, 1959. The eighth annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are

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completed by all commercial fish buyers operating within the Province. The following information is contained in this report: summary of landings by district and total landed value of all fish; highlights of catch statistics--a general review of fishing by species, gear, and area; and detailed district and area monthly statistics by type of gear. The report is intended as a factual statement of catch and no attempt is made except in a general way to explain the success or failure of fishing operations. However, certain economic, weather and conservation factors that have a bearing on the catch are reviewed.

Commercial Fishing Licenses, British Columbia, 1958 (An Analysis of License Holders), 5 pp., processed. Department of Fisheries of Canada, 1110 West Georgia St., Vancouver 5, B. C., February 27, 1959. Statistics indicate that all types of commercial fishing licenses increased over 1957. This is attributed primarily to the fact that expectations for the 1958 salmon runs were high and actual returns reached record proportions.

The Commercial Salmon Fisheries of British Columbia, Statistical Basebook Series No. 3. Economics Service, Department of Fisheries of Canada, Ottawa, Canada. This is the third volume in a series of special publications designed to provide abstracts of basic statistical data on the Canadian fisheries in forms most convenient for ordinary reference. It contains the principal historical statistics of the salmon fisheries of British Columbia. The contents are divided into three main groups: catches or landings--quantities and values; products--output and distribution; and prices.

Eleventh Annual Report of the Fisheries Prices Support Board for the Year 1957-58, 9 pp., printed, 10 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, June 1958. Describes the Fisheries Price Support Act of 1957; operations of the Board; the Canadian fisheries and fisheries markets in 1957; and Board activities including fisheries salt assistance, fishermen's indemnity plan, and research.

Journal of the Fisheries Research Board of Canada, vol. 15, no. 6, November 1958, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. This issue, the second of two Fiftieth Anniversary issues, is devoted exclusively to the Biological Station, St. Andrews, New Brunswick. It consists of contributions from present or former members of the staff of that station and their collaborators. The first article in this issue also is an illustrated account of the history and present activities of the Station prepared by its Director. The first commemorative issue (see Commercial Fisheries Review, vol. 21, no. 2, February 1959) was devoted to the Biological Station, Nanaimo, British Columbia.

"Round Haddock Landings in Newfoundland: Quantity and Quality Relative to Gutted Haddock," by Wilfred Templeman and A. M. Fleming, article, Journal of the Fisheries Research Board of Canada, vol. 15, July 1958, pp. 517-527, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

COD:

"The Effect of Various Lighting Conditions on the Efficiency of 'Candling' Cod Fillets for Detection of Parasites," by H. E. Power, article, Journal of the Fisheries Research Board of Canada, vol. 15, July 1958, pp. 537-542, printed. Fisheries Research Board of Canada, Ottawa, Ontario, Canada.

"Researches on the Possibility of Obtaining Gelatine from Inedible Parts of Cod," by K. Czapke, article, Prace Morskiego Instytutu Rybackiego w Gydnia (Bulletin of the Marine Fisheries Institute of Gdynia), no. 7, 1954, pp. 241-244, printed in Polish. Morskiego Instytutu Rybackiego w Gdynia, Alejazjednoczenia 1, Gdynia, Poland.

CRAYFISH:

The Crayfishes of Maryland, by W. G. Meredith and F. J. Schwartz, 2 pp., illus., printed. (Reprinted from Maryland Tidewater News, vol. 15, no. 1, supplement no. 12, January-February 1959.) Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md. The authors discuss crayfish food, molting, regeneration, reproduction, economic importance, species in Maryland, and distribution of species.

"The Systematics and Distribution of Crayfishes in California," by J. A. Riegel, article, California Fish and Game, vol. 45, no. 1, January 1959, pp. 29-50, illus., printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif.

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"Bacteria of Public Health Significance on White Fish Prior to Brining," by R. Spencer and D. L. Georgala, article, The Microbiology of Fish and Meat Curing Brines (Proceedings of the Second International Symposium of Food Microbiology, 1957), pp. 299-302, printed. Department of Scientific and Industrial Research, P. O. Box 569, London, S. E. 1, England, 1957.

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ECHO-SOUNDING:

Ultrasonic Reflection Loss of Fish--Shoal and Characteristics of the Reflected Wave," by T. Hashimoto and Y. Maniwa, pp. 113-139, processed. (Reprinted from Technical Report of Fishing Boat, March 1955.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England, 1957.

EELS:

Eels--A Biological Study, by Leon Bertin, 198 pp., illus., printed, 25s. (US$3.50). Cleaver-Hume Press, Ltd., London, England, 1956.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

ELECTRICAL FISHING:

La Peche Electrique en Eau Douce (Electrical Fishing in Fresh Water), by J. A. Timmermans, Groenendaal Research Station Bulletin, Series D, no. 15, 42 pp., illus., printed in French with Dutch summary. Ministry of Agriculture Research Station, Groenendaal, Belgium, 1954.

"Behaviour of Refrigerated Fish Fillets After Irradiation With Ultraviolet Light," by A. Monzini and G. Botalla, article, Annali della Sperimentozione Agraria, vol. 10, 1956, pp. 1447-1455, in Italian. Ministerio dell' Agricoltura e della Foreste, Rome, Italy.

FISH LIVER OILS:

"Utilization of the Liver Oil of Deep-Sea Sharks. XII--Preparation of Polymerized Product from Squalene. 1-Polymerization of Squalene with Acid Clay as the Catalyst," by Hideo Higashi, Shigeo Izeki, and Motoaki Asano, article, Nippon Suisangaku Kaishi, vol. 22, 1956-57, pp. 378-382, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

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"Fish Meal. 14--Drying of Seaweed," by G. M. Dreosti and A. M. Lewis, paper, Annual Report of the Fishing Industry Research Institute, vol. 9, no. 30, 1955-1956, printed. Fishing Industry Research Institute, Cape Town, South Africa, 1957.

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"Bureau of Commercial Fisheries Oil Research Program," by Maurice E. Stansby and Charles Butler, article, Journal of the American Oil Chemists' Society, vol. 35, July 1958, pp. 8, 10, 11, 12, illus., printed. American Oil Chemists' Society, 35 E. Wacker Drive, Chicago 1, Ill.

"Deodorization of Fish Oil," by Takumi Shizuo, et al, Japan patent no. 284, January 20, 1956, printed in Japanese.

FISH POPULATIONS:

Handbook of Computations for Biological Statistics of Fish Populations, by William E. Ricker, 300 pp., printed, $5.00. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1959. This book is a greatly expanded elaboration of the author's 1948 work, Methods of Estimating Vital Statistics of Fish Populations (Indiana University Science Series). It presents a review of the major contributions to date, excluding Russian and Japanese work. Topics covered include, among others, the following: estimation of survival rate from age composition; vital statistics from marking--one or more seasons, survival constant or variable; survival and rate of fishing estimation from relation of fishing success to catch or effort; stock and mortality estimation from catch statistics and qualitative composition; growth in length and weight; yield computation from given recruitment; relation of recruitment to adult stock size; and direct estimation of relation of equilibrium yield to size of stock and rate of fishing.

FISH SCALES:

"Fish Scales as Industrial Raw Material," by A. Michniewicz, article, Przemysl Spozywczy, vol. 9, 1955, pp. 326-327, printed in Polish. Przemysl Spozywczy, al. Niepodleglosci 188, Warsaw 12, Poland.

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"Purchasing Guides Established for Two Ingredients," article, Feedstuffs, vol. 30, August 9, 1958, p. 40, printed. Miller Publishing Co., 118 S. 6th St., Minneapolis 2, Minn.

FOOD AND AGRICULTURE ORGANIZATION:

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, Italy.

Report on the Fisheries Industry in the Countries Served by the Caribbean Commission, FAO Report No. 781, 87 pp., processed, March 1958. This report discusses the increase of fish production; the development of local fish-marketing, including preservation; Government fishery administration; and the need for additional specialized technical assistance in these fields. The countries served by the Caribbean Commission include the French West Indies, the Dutch Windward Islands, the British Windward and Leeward Islands, Barbados, Trinidad, the Guianas, Puerto Rico, and the Virgin Islands. Topics covered are, among others, the following: analysis of the fisheries in the Caribbean area; methods of fish capture; inland fisheries and fish breeding; government departments and private undertakings; fish processing industries; fish marketing; and conclusions and recommendations.

Current Bibliography for Fisheries Sciences, vol. 1, no. 10, December 1958, 152 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

The Potential Contribution of Atomic Energy to Development in Agriculture and Related Industries, by R. A. Silow, 24 pp., printed. (Reprinted from The International Journal of Applied Radiation and Isotopes, vol. 3, 1958, pp. 257-280.) Atomic Energy Branch, Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, Italy, August 1958. This survey includes, among others, sections on the use of radiation in food preservation and processing; and the significance of research in the development of agriculture and related industries. There are still many problems to be solved before this method of food preservation can become a commercial reality. The author concludes that, "research in agriculture, forestry, and fisheries must, because of the diffuse nature

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of these industries, be the responsibility of government, and only if governments recognize and assume that responsibility will those industries derive the benefits that atomic energy can undoubtedly bring to them."

FRANCE:
"Le Pays et la Peche Face au Marche Commun" (The Nation and the Fishing Industry Look at the Common Market), by Jules Molard, article, France Peche, vol. 4, no. 25, January 25, 1959, pp. 15-18, 50 illus., printed in French. France Peche, 84, Rue Carnot, Lorient, France.

Le Poisson, Aliment Naturel (The Fish, a Natural Food), 31 pp., illus., printed in French. Maquette de Claude Bourgeois, Dyna-Publicite et Progande, 50, rue Saint-Lazare, Paris (IX^{e}), France.

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"The Freezing of Fish--Failure and Success," by F. Slater Jackson, article, Contributions to Canadian Biology, vol. 1, no. 10-18, 1923, pp. 299-302, printed. Fisheries Research Board of Canada, Ottawa, Ontario, Canada.

"Origen de los Procesos Industriales, Aplicados a la Produccion del Mar" (The Origin of Industrial Processes Applied to Fishery Products), by Valentin Paz Andrade, article, Revista del Frio (Refrigeration Review), vol. 3, February 1959, special issue, pp. 37-42, printed in Spanish. Centro Experimental del Frio, Serrano, 150, Madrid, Spain.

FREEZING FISH AT SEA:
"Continuous Freezing of Fish on Board Ship," by M. Sadorge, article, Proceedings of the Ninth International Congress on Refrigeration, pp. 4111-4115, printed. International Institute of Refrigeration, 177 Boulevard Malesherbes, Paris 17, France, 1955.

FRESH FISH:
"Fresh Fish. 2--Changes in Weight of Iced Hake During Dipping and Bulk Storage," by C. E. B. Cooper, article, Annual Report Fishing Industry Research Institute for April 11, 1956-December 31, 1956, vol. 10, p. 8, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa, 1957.

FROZEN FISH:
"Assessment of Storage Period of Frozen Fish," article, Report of the Food Investigation Board (Great Britain) for 1956, p. 12. British Information Services, 30 Rockefeller Plaza, New York 20, N. Y., 1957.

"Measurement of Toughness in Cold-Stored Fish," by R. M. Love, article, Nature, no. 182, July 12, 1958, pp. 108-109, printed. St. Martin's Press, Inc., 103 Park Avenue, New York 17, N. Y.

"Packaging Effects on Frozen Fish Palatability are Studied by Minnesota Researchers," by J. D. Winter and Shirley Trantanella, article, Quick Frozen Foods, vol. 20, July 1958, pp. 81-83, 159, printed. E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

"Use of Antioxidants in the Storage of Frozen Fish," by R. R. Perepletchik, article, Rybnoe Khozíastvo, vol. 32, no. 10, 1956, pp. 80-86, printed in Russian. Rybnoe Khoziastvo, B 140 . B Krasnosel'skaia, 17, Moscow, Russia.

FROZEN FOODS:
"Bacteriological Content of Marketed Precooked Frozen Foods in Relation to Public Health," by A. Doreen Ross and F. A. Thatcher, article, Food Technology, vol. 12, July 1958, pp. 369-371, printed. The Garrard Press, 510 North Hickory, Champaign, Ill.

FUR SEALS:
The Romance of the Alaska Fur Seal, 48 pp., illus., printed. Fouke Fur Co., 1328 So. Kingshighway, St. Louis 10, Mo., 1958. An attractive booklet, illustrated with drawings, describing the history of Alaska, the natural history of the fur seal, and life on the Pribilof Islands. The story of the fur seal is, "a story of success in the conservation of a renewable resource which was once threatened with extinction but today returns a substantial income, both to the fur industry and to our Government."

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"Description of the Fishery with Large Traps," by E. Schlieker, article, Deutsche Fischerei Zeitung, vol. 4, no. 5, May 1957, p. 129, printed in German. Deutsche Fischerei Zeitung, Friedrichshagen, Müggelseedamm 310, East Berlin, Germany.

"Lath-Spacing in Lobster Traps," by W. Templeman, article, Progress Reports of the Atlantic Coast Stations, no. 69, pp. 22-27, printed. Fisheries Research Board of Canada, Ottawa, Ontario, Canada, May 1958.

"Study on the Fishing Capacities of Purse Seines. III--On the Difference Between Cotton and Kyokurin Purse Seines," by Yunosuke Itaka, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, nos. 7 & 8, 1957, pp. 344-347, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6-chome, Tokyo, Japan.

GHANA:
Report of the Fisheries Department, 1957, by F. R. Johnson, 22 pp., illus., printed, 2s. 6d. (58 U. S. cents). Government Printer, Accra, Ghana, 1958. This report, which covers calendar year 1957, describes the activities of the Fisheries Department as follows: (1) sea fisheries, including among others, sections on motor fishing vessels, fishing centers, the trawl catch, line fishing, and set nets; and (2) river fisheries, including among others sections on Northern Ghana, stocking and fish culture, and the oyster fishery. Included in this year's report are tables and graphs pertaining to trawl and line catches.

HERRING:
Herring (CLUPEA HARENGUS L.) in Aquaria. I--Establishment, by B. B. Parrish, J. H. S. Blaxter, and F. G. T. Holliday, Scottish Home

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Department Marine Research No. 5, 1958, 11 pp., illus., printed, 5s. (70 U. S. cents). Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland. The main stages in the establishment of individuals of a species in an aquarium are: (1) capture; (2) transport to the aquarium; (3) initial establishment; and (4) maintenance and feeding after establishment. The authors describe, with the aid of diagrams and photographs, the best methods of capture, tank construction, and means of feeding. Most of the fish used for these experiments were caught by beach seine. Terramycin was used in the tanks to prevent infection.

Herring (CLUPEA HARENGUS L.) in Aquaria. II--Feeding, by J. H. S. Blaxter and F. G. T. Holliday, Scottish Home Department Marine Research No. 6, 1958, 22 pp., illus., printed, 6s. (84 U. S. cents). Her Majesty's Stationery Office, 13A Castle St., Edingurgh 2, Scotland. One of the difficulties in establishing herring in aquaria is to induce the fish to feed. Those foods used most successfully were chopped squid, mussel, and limpet. The authors describe the behavior during feeding; quantity consumed; selection of food; effect of low temperature; rate of passage of food through the gut; and the effects of light, noise, and tagging on feeding.

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"The Washing of Used Ice with Sea Water," by D. L. Georgala, article, Annual Report, Fishing Industry Research Institute 1957, vol. 11, p. 12, illus., printed. Fishing Industry Research Institute, Cape Town, Union of South Africa, 1958.

ICELAND:

Frequency and Distribution of Post-Larval Stages of Herring (CLUPEA HARENGUS L.) in Icelandic Waters, by Hermann Einarsson, 38 pp., illus., printed in English. (Reprinted from Rit Fiskideildar, vol. 2, no. 4.) The University Research Institute, Department of Fisheries, Borgartún 7, Reykjavik, Iceland, 1956.

Skarkolinn (PLEURONECTES PLATESSA L.) i Hamarsfirdi (The Plaice in Hamarsfjord), by Hermann Einarsson, 20 pp., illus., printed in Icelandic with English summary. (Reprinted from Rit Fiskideildar, vol. 2, no. 3. The University Research Institute, Department of Fisheries, Borgartun 7, Reykjavik, Iceland, 1956.

ICING:

"Effect of Sodium Nitrite-Containing Ice on Storage Life and Quality of Baltic Haddock," by Jozef Borowik, Ewa Fischer, Stanislaw Ostrowski, and Piotr Trzesinski, article, Przemysl Spozywczy, vol. 10, 1956, pp. 282-283, printed. Przemysl Spozywczy, al. Niepodleglosci 188, Warsaw 12, Poland.

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(International North Pacific Fisheries Commission) Proceedings of the Fifth Annual Meeting, 1958 (Tokyo, Japan, November 4-10, 1958), 143 pp., processed. International North Pacific Fisheries Commission, 209 Wesbrook Bldg., University of British Columbia, Vancouver 8, B. C., Canada. Contains the agenda, list of participants, minutes of sessions, and committee reports for the fifth annual meeting of the Commission. The appendixes present, among others, papers on distribution of chum, pink, and sockeye salmon; results of deep-sea salmon tagging by the United States; review by Japan of the data obtained from high-seas tagging carried out by the United States and Japan; offshore distribution and experimental fishing; plans for oceanographic work in 1959; and future plans for king crab research.

ITALY:

Statistica della Pesca e della Caccia, 1958 (Fishing and Hunting Statistics, 1958), 130 pp., illus., printed, in Italian. Istituto Centrale di Statistica, Rome, Italy, 1958. This report presents data on 1957 landings of fish and shellfish, markets and wholesale prices, and number and types of fishing vessels.

JAPAN:

Annual Report of Catch Statistics on Fishery and Aquiculture, 1957, Agriculture, Forestry, and Fishery Statistics Bulletin 33-23, 498 pp., illus., printed in Japanese and English. Association of Agriculture-Forestry Statistics, No. 4, 1-chome, Onden, Shibuya-ku, Tokyo, Japan, December 1958. Contains statistical information on the 1956 production of marine fisheries--whaling, factoryship type of pelagic fisheries on high seas, and domestic marine fisheries; culture in shallow seas; inland water fisheries and fish culture; and processing. Also presents market prices of fishery commodities, estimated value of catch, and consumption of petroleum products for fisheries.

Forecast of Spring Sardine Fishery in Northern Japan Sea, translated by I. Yamanaka, 14 pp. Japan Sea Regional Fisheries Research Laboratory, Niigata, Japan , April 3, 1958.

LAMPREY:

Lampreys of West Virginia, by Frank J. Schwartz, miscellaneous publication, 2 pp., illus., printed, (Reprinted from West Virginia Conservation, February 1958, pp. 8-9.) Department of Research & Education, Solomons, Md.;

LAW OF THE SEA:

"Le Situation Juridique des Pecheries Sedentaires en Haute-Mer" (The Juridical Position of the Non-Migratory Fisheries on the High Seas), by Alexandre Papandreou, article, Revue Hellenique de Droit International, 1958, vol. 153, 12 pp., printed in French. Greek Review of International Law, Athens, Greece. This work, written as a doctoral thesis at the University of Geneva, brings together and analyzes the views of writers on the subject of international fishery law. It also presents some leading examples of state practice. The author observes that "the possession of special rights by a single state over a sedentary fishery in the high seas necessarily derogates from the general freedom of the seas . . . . ."

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"A Review of the Lingcod, Ophiodon elongatus," by J. B. Phillips, article, California Fish and Game, vol. 45, no. 1, January 1959, pp. 19-27, illus., printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif.

LOBSTERS:

The Occurrence of NICOTHOE ASTACI Audouin and Milne Edwards on Scottish Lobsters, by James Mason, Scottish Home Department Marine Research No. 9, 1958, 8 pp., illus., printed, 3s. 4d. (about 47 U. S. cents). Her Majesty's Stationery Office, 13 A Castle St., Edinburgh 2, Scotland.

"Studies on the Black Discoloration of Lobster. III--On the Control of Blackening," by Daiichi Kakimoto and Akio Kanazawa, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, nos. 7 & 8, 1957, pp. 454-457, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6-chome, Tokyo, Japan.

MACKEREL:

The Comparative Osteology of the Scombroid Fishes of the Genus SCOMBEROMORUS from Florida, by Francisco Mago Leccia, Contribution No. 219, 43 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 8, no. 4, December 1958, pp. 229-341.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Virginia Key, Miami, Fla.

MARINE ALGAE:

"Studies of the Savor of Marine Algae. III--Contents of Free Amino Acids in the Laver, Porphyra Tenera," by Yasuhiko Tsuchiya and Takashi Sasaki, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 4, 1957, pp. 230-233, printed in Japanese with English synopsis. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

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Studies on the Radioactive Marine Organisms (especially KATSUWONUS VAGANS) caused by Nuclear Detonation, by Tsu Otanimachi, illus., printed in Japanese with English summary. (Reprinted from Journal of the Faculty of Fisheries, vol. 2, no. 2, July 20, 1956, pp. 43-96.) Prefectural University of Mie, Mie Prefecture, Japan.

MARYLAND:

(Maryland Department of Research and Education) Annual Report, 1957, by L. Eugene Cronin, 38 pp., illus., printed. (Reprinted from Fourteenth Annual Report, Maryland Board of Natural Resources.) Chesapeake Biological Laboratory, Solomons, Md., August 1958. Brief summaries of most of the current activities and accomplishments of the Department are presented. The sections of this report concerned with fisheries contain summaries of work dealing with the Chesapeake Bay studies, hydrography, Chincoteague Bay studies, and Inland Resources Division. Details are presented on oysters, clams, crabs, white perch, fish egg studies, fresh-water fish distributional study, yellow-perch studies, Patuxent River fishes, striped bass studies, and commercial catch program.

MIDWATER TRAWLING:

"An Experiment on a Midwater Trawl. IV--On its Mechanism and a Trial Practice," by Kiichiro Kobayashi, article, Bulletin of the Faculty of Fisheries Hokkaido University, vol. 7, no. 1, May 1956, pp. 21-30, printed in Japanese with English abstract. Faculty of Fisheries (Hakodate) Hokkaido University, Hokkaido, Japan.

NIGERIA:

Annual Report of the Fisheries Department of the Eastern Region of Nigeria for the Year 1956-57, 8 pp., printed, 1s. (14 U. S. cents). The Government Printer, Enugu, Eastern Region of Nigeria, 1959. This report covers reorganization of the Fisheries Department, Gold Coast canoes, fish ponds, the fish farm at Umuna, the fishing stations at Finitasingi and Mpanak, and investigation of bases for powered sea-fishing boats.

NUTRITION:

"The In Vitro Digestibility and Nutritional Quality of Dehydrated Beef, Fish, and Beans," by Richard R. Adachi, Leonard Sheffner, and Harry Spector, article, Food Research, vol. 23, July-August 1958, pp. 401-406, printed. Department of Food Technology, University of California, Davis, Calif.

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The Gulf Stream (A Physical and Dynamical Description), by Henry Stommel, 202 pp., illus., printed, $6. University of California Press, Berkeley, Calif., 1959.

Oceanography and Marine Biology (A Book of Techniques), by H. Barnes, 218 pp., illus., printed, $7. The Macmillan Co., 60 - 5th Ave., New York 11, N. Y., 1959.

OYSTER SHELL:

Unused Oyster Shell in South Carolina Suitable for Seed Oyster Production, by G. Robert Lunz, 8 pp., illus., printed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 48, 1958, pp. 44-51.) Bears Bluff Laboratories, Wadmalaw Island, S. C., March 1959. Although South Carolina now has a surplus of cultch from the steam canneries, this may dwindle as an export seed oyster industry develops. A possible substitute is to be found in old oyster shell thrown up on the banks of many South Carolina creeks and rivers by wave action and storms. In view of the increased interest in seed oyster production for out-of-State markets, and the possible shortage of steamed shell as the seed oyster industry develops, the author has presented some comparative data on the spatfall on washed and steamed shell.

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OYSTERS:

"Le Commerce des Huîtres en France" (The French Oyster Market), by Charles Hervé, article, La Pêche Maritime, vol. 38, no. 971, February 1959, p. 78, printed in French. La Pêche Maritime, 190, Boulevard Haussmann, Paris, France.

"L'Ostréiculture dans le Bassin d'Arcachon" (Oyster Culture in the Arcachon Basin), by I. G. Antoune, article, La Pêche Maritime, vol. 38, no. 971, February 1959, pp. 79-86, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussmann, Paris, France.

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"Enzymatic Oxygen Removal from Packaged Foods," by Don Scott, article, Food Technology, vol. 12, July 1958, pp. 7-8, 11, 13-17, printed. The Garrard Press, 510 North Hickory, Champaign, Ill.

PUERTO RICO:

Recent Fish Records from Puerto Rico, by Donald S. Erdman, 26 pp., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 6, no. 4, December 1956, pp. 315-340.) Department of Agriculture and Commerce, San Juan, Puerto Rico.

QUALITY:

"Chemical Examination of Freshness of Fish," by J. Wierzchowski, article, Food, vol. 26, no. 305, February 1957, p. 85, printed, translated. Tothill Press, Ltd., 33 Tothill St., Westminster, London, S. W. 1, England.

"Grading Fish for Quality. 3--Grading of Recently Cut Fillets," by C. H. Castell and Maxine F. Greenough, article, Journal of the Fisheries Research Board of Canada, vol. 15, July 1958, pp. 729-748, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Objective Spoilage Tests for Fish Stored under Conditions Other than Normal Chilling in Ice," by A. F. M. G. Luijpen, article, Journal of the Science of Food and Agriculture, vol. 9, July 1958, pp. 410-417, printed. Society of Chemical Industry, 14 Gelgrave Square, London, S. W. 1, England.

REFRIGERATION:

Directory of Public Refrigerated Warehouses, 1959 (Perishable Food Industry's Guide), 144 pp., printed. National Association of Refrigerated Warehouses, Tower Bldg., Washington 5, D. C. Contains complete up-to-date listings of the organization, services, and facilities of all NARW member companies (specializing in the safe storage of perishable commodities requiring freezer or cooler service) operating throughout the United States, its possessions, and various foreign countries.

REFRIGERATION AND FREEZING:

Un Demi-Siècle d'Activités Frigorifiques Internationales, 1908-1958 (Half a Century of International Refrigeration Activity), 91 pp., illus., printed in French and English. International Institute of Refrigeration, 177, Boulevard Malesherbes, Paris (17e), France. This report outlines the creation and activity of the first International Congress of Refrigeration, the International Association of Refrigeragion, and the present International Institute of Refrigeration. The results of 50 years of activity in the organization are presented with plans for the future. It also presents the Agreement Concerning the International Institute of Refrigeration.

SALMON:

Wealth of the River, second edition, revised, 18 pp., printed. Columbia Basin Fisheries Development Association, Astoria, Ore. This pamphlet presents facts concerning the Columbia River salmon industry and petitions for the conservation of this industry. It is submitted with reference to proposals to construct various high dams on the Columbia River and its tributaries.

SALT HERRING:

"The Effect of Ascorbic Acid on the Autoxidation of Fats. Experiments with Salt Herring," by R. Marcuse, article, Fette, Seifen, Anstrichmittel, vol. 58, 1956, pp. 1063-1066, printed in German. Deutsche Gesellschaft für Fettwissenschaft, Industrieverlag von Herhaussen K. G., 24 Rödingsmarkt, Hamburg 11, Germany.

SCOTLAND:

Lobster and Crab Fisheries in Scotland, by H. J. Thomas, Scottish Home Department Marine Research No. 8, 1958, 107 pp., illus., printed, £ 1 12s. 6d. (about US$4.56). Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland. The catching of shellfish is an important element in the economy of the inshore fishing industry of Scotland. The author discusses materials and methods used in this investigation, fishing equipment and practices, landings and effort in the 22 fishery districts, storage and marketing, costs and profits, and biometrics. He concludes that landings of lobsters in Scotland are at a high level, being above the average for the last 60 years. Landings of crabs are currently at their highest level for the past 56 years. This is largely attributable to the recent establishment of processing plants.

SEAWEEDS:

"The Water and Iodine Contents of Some Pacific Coast Kelps," by A. T. Cameron, article, Contributions to Canadian Biology (Supplement to the 5th Annual Report of the Department of Naval Service, Fisheries Branch), Sessional Paper No. 38a, 1916, pp. 169-173, printed. Fisheries Research Board of Canada, Ottawa, Ontario, Canada.

SHELLFISH ENEMIES:

"Condylostoma--An Enemy of Bivalve Larvae," by V. L. Loosanoff, article, Science, vol. 129, no. 3342, January 16, 1959, p. 147, illus., printed. American Association for the Advancement of Science, 1515 Massachusetts Ave., N. W., Washington 5, D. C.

SHRIMP:

"The Effect of Washing on the Darkening of Cold-Stored Shrimp," by S. Asakawa, article,

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Refrigeration, vol. 31, no. 350, December 1956, p. 23, printed in Japanese. Nihon Reito Kyokai (Japanese Society of Refrigeration), No. 3, 1-chome, Ginza Nishi, Chuo-Ku, Tokyo, Japan.

"A Material of Many Uses That Can Be Obtained from Shrimp Shells," article, Chemical Processing, vol. 19, p. 53, August 1956, printed. Putnam Publishing Company, 111 E. Delaware Place, Chicago, Ill.

Notes on the Biology of the Common Prawn, PALAEMON SERRATUS (Pennant), by H. A. Cole, Fishery Investigations, series 2, vol. 22, no. 5, 22 pp., illus., printed, 6s. (84 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London W. C. 2, England, 1958. Growth and breeding of Palaemon serratus (Pennant) in North Wales is described from the examination of about 12,000 specimens. Growth patterns in the third and subsequent summers were not so clear but it seems probable that many prawns live for 4 full years with some reaching or exceeding 5 years. There was a correlation between size and age of females and earliness of spawning and hatching of eggs.

"Shrimp Comeback," by Percy Viosca, Jr., article, Louisiana Conservationist, vol. 11, no. 2, February 1959, pp. 2-4, illus., printed. Louisiana Wild Life and Fisheries Commission, 126 Civil Courts Bldg., New Orleans 16, La. The author discusses the decline in the white shrimp fishery of Louisiana and its comeback in 1958. Considering the white and brown shrimp combined, he states that "approximately twice the tonnage was produced with about half the effort and expense in 1958, immediately after the season opened, as compared with 1957. The result was about 4 times the tonnage and 5 times the value for the same unit of effort." Graphs showing the comparative landings for 1956, 1957, and 1958 for both brown and white shrimp are included.

SPINY LOBSTERS:

"Rock Lobster. 1--Pasteurized Rock Lobster Tails," by G. M. Dreosti, and R. P. van der Merwe, article, Annual Report Fishing Industry Research Institute for April-December 1956, vol. 10, p. 15. Fishing Industry Research Institute, Cape Town, Union of South Africa, 1957.

SPOILAGE:

"Studies on Putrefaction of Aquatic Products. XXIV--On Spoilage of Some Shellfishes," by Wataru Simidu and Sigeyuki Hibiki, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 5, 1957, pp. 255-259, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6-chome, Tokyo, Japan.

TRADE LIST:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade list. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at $2 each.

Canneries--New Zealand, 3 pp., (December 1958). Lists the names of canneries and addresses and types of products handled. Includes fish and shellfish canneries.

TUNA:

"Lipids of the Muscle of Tuna, Thynnus orientalis, Lecithins of the Dark-Colored and Ordinary Muscles," by Hisanao Igarashi, Koichi Zama, and Muneo Katada, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 5, 1957, in Japanese with English summaries. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6-chome, Tokyo, Japan.

TURKEY:

"About the Technical Problems of our Fish Canning Industry (Part II)," by A. Baki Uğur, article, Balik ve Balikcilik (Fish and Fishery), vol. 7, no. 3, March 1959, pp. 12-15, printed in Turkish. Balik ve Balikcilik, Kat 5, Yeni Valde Han, Sirkeci, Istanbul, Turkey.

"The Activities of the Hydrobiological Research Institute in 1958 (Part I)," by Recai Ermin, article, Balik ve Balikçilik (Fish and Fishery), vol. 7, no. 3, March 1959, pp. 8-9, illus., printed in Turkish. Balik ve Balikcilik, Kat 5, Yeni Valde Han, Serkeci, Istanbul, Turkey. The author describes, with the aid of photographs, research on sardines, mackerel, and Spanish mackerel.

Balik ve Balikçilik (Fish and Fishery), vol. 7 no. 2, February 1959, 32 pp., illus., printed in Turkish, Balik ve Balikcilik, Kat 5, Yeni Valde Han, Sirkeci, Istanbul, Turkey. Contains, among others, the following articles: "About the Middle-Sea Trawls" (discusses trials made in Turkey and the advantages of this type of net), by M. Ilham Artüz; "Delicatessen made from Fish" (explains the methods of preparing hamburgers from bonito), O. N. Koctürk; "The Proteins and Its Denaturation in Fishes," by Bedia Taneri; "About the Technical Problems of Our Fish Canning Industry" (analyzes the problems met in the Turkish fish-canning industry), by A. Baki Uğur; and "About the Tuna Catch."

TWINE:

A Comparison Between Canadian, British and Japanese Nylon Gill-Net Twines, by P. J. G. Carrothers; Circular No. 51, 14 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada. Describes the qualitative and quantitative properties of several Canadian, British, and Japanese nylon twines. Details are presented on twine construction, twist angle, diameter, equivalent yarn area, runnage, equivalent yarn runnage, strength, coefficient of strength variation, breaking length, strength decrease on wetting, knot strength efficiency, extention at rupture, and toughness index. Physical properties of the twines tested are shown in six tables. The author believes that, "Generally speaking, the new Japanese twines are not appreciably different from their Canadian and British counterparts."

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

UNION OF SOUTH AFRICA:

The South African Fishing Handbook and Buyers' Guide 1958/59, 210 pp., illus., printed, £2 2s. (US$5.90). Odhams Press, South Africa (Pty.) Ltd., P. O. Box 4245, Cape Town, Union of South Africa. This book contains a wealth of detail on the Union of South Africa and South-West Africa fisheries and fishing industry. Included are landings of trawler fish; fish catch; fish processing plants; technical progress in the industry; South Africa's place in the world's fish trade; fishing companies; fish products; details of fishing vessels; list of fish species; legal minimum size limits of fish; organizations serving the industry; Who's Who in the industry; classified buyer's guide; list of vessels; suppliers of fuel.

The South African Pilchard (SARDINOPS OCELLATA) and Maasbanker (TRACHURUS TRACHURUS). The Predation of Sea Birds in the Commercial Fishery, by D. H. Davies, Investigational Report No. 31, 16 pp., illus., printed. (Reprinted from Commerce and Industry, June 1958.) Department of Commerce and Industries, Division of Fisheries, Pretoria, Union of South Africa.

SYNTHETIC FABRIC CLOTHING TO REPLACE OILSKINS

Application for patent rights on a new type of fabric to be made into protective clothing for fishermen has been filed in the United Kingdom. The new fabric made of synthetic materials is stated to eliminate the need to wear oilskins, and life jackets which are bulky and restrict the freedom of movement to work. The new material is buoyant, retains body warmth, keeps a man afloat if he is washed overboard, and increases the chances of survival in cold seas. It is stated to cost 30 percent more than a first-class oilskin. (The Fishing News, May 17, 1957.)

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SUCCESSFUL FRESH-FISH RETAILING

The essential ingredients of fresh-fish retailing, as practiced by a leading Eastern chain store organization were published recently by Supermarket News. Quality, a large variety of fish, and customer service were named as the principal factors for success. As a result, sales are up. People make special stops to buy their fish and shellfish at those stores.

Emphasis on quality extends through the entire operation until the final sale to the customer. Whenever possible, this chain store organization requests its suppliers to use waterproof-corrugated cardboard boxes with a 50-pound capacity rather than the larger wooden containers. They claim that this not only enables easier handling, but is more sanitary and results in better quality fish. Further, since the cardboard boxes are cheaper, they are disposable, thus eliminating the dangers of a high bacterial count after use.

Fish received at the company warehouses are inspected by a seafood buyer and shipped out to its stores the same day. Store personnel are instructed to supervise continuously the quality of the fish, and are warned never to sell any fish that isn't perfect.

Each of the stores in this chain has a self-contained fish department with its own cabinets, storage facilities for fresh fish, its own ice-making machine, and other important features for adequate customer service.

This chain always sells a full variety of all available fish, which are cleaned and prepared for cooking in the manner requested by the customer. Fish department managers are trained to advise consumers how to cook each species of fish, and can suggest various recipes.